



HIKMA FARMACÊUTICA (PORTUGAL) S.A.

**MATERIAL SAFETY DATA SHEET**

***Fosphenytoin Sodium Injection, USP***

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**Section I – Chemical Product & Company Identification**

Product Identification Fosphenytoin Sodium Injection, USP, 75mg/mL [50mg PE*/mL (PE = Phenytoin sodium equivalent)]			WHMIS classification	
General Use Anti-convulsant, sodium channel inhibitor			Type of container Vials	
Manufacturer's Name Hikma Farmacêutica, S.A.		Supplier's Information This material is intended for IV or IM injection under the supervision of physicians		
Manufacturer's Address Estrada do Rio da Mó, 8, 8A, 8B, Fervença				
City Terrugem SINTRA	Postal Code 2705-906	Country Portugal	MSDS Preparer's name AMBR	
Phone 351 219608410	E-mail geral@hikma.pt	Fax 351 21 961 51 02	Date of MSDS December 2009	
Other useful information 5,5-diphenyl-3-[(phosphonoxy)methyl]-2,4- imidazolidinedione disodium salt				

**Section II - Composition/Information on Ingredients**

Hazardous Ingredients	% (by weight)	CAS identification	LD <sub>50</sub> (species and route)	LC <sub>50</sub> (species)
Fosphenytoin Sodium	7.5%	92134-98-0		

Tromethamine	1.2%	77-86-1		
Water for Injection USP	QS	7732-18-5		

Hydrochloric acid and/or sodium hydroxide added for pH adjustment

### Section III - Hazards Identification & Emergency Overview

Route of entry	Skin <input checked="" type="checkbox"/>	Eye <input checked="" type="checkbox"/>	Inhalation <input checked="" type="checkbox"/>	Ingestion <input checked="" type="checkbox"/>
<b>Emergency Overview</b> Harmful by inhalation, in contact with skin and if swallowed. May cause skin, eye, and respiratory tract irritation. May cause drowsiness and dizziness. May cause adverse cardiovascular effects. May cause central nervous system depression. May cause adverse liver effects. May cause adverse effects on the bone marrow and blood-forming system. Contains a known or suspected reproductive toxin. May cause harm to the unborn child.				
<b>Potential Health Effects</b> <b>Acute Toxicity</b> Eye – May cause irritation. Skin – May cause irritation. May be absorbed through the skin in harmful amounts. Inhalation – Not an expected route of exposure. Inhalation of vapour in high concentration may cause irritation of respiratory system. May cause additional effects as listed under "Ingestion" Ingestion – Toxic if swallowed. Ingestion may cause gastrointestinal irritation. May cause adverse effects on bone marrow and blood-forming system. May cause adverse liver effects. May cause adverse kidney effects. May cause adverse cardiac effects.  <b>Over Exposure by Injection</b> Chronic adverse effects may include bleeding, tender and enlarged gums, muscle pain, enlargement of facial features, swelling of breasts in males, excessive hair growth on body and face, and insomnia. Formate and phosphate metabolites of fosphenytoin may contribute to overdose toxicity. Formate toxicity is associated with severe anion-gap metabolic acidosis. Hypocalcemia may result from large increases in phosphate concentrations.				
<b>Medical Conditions Aggravated by Exposure</b> Allergies, neurological disorders, liver disorders, kidney disorders, blood disorders, and cardiovascular disease. Use of alcoholic beverages may enhance toxic effects.  <b>Interactions with other Chemicals</b> Use of alcoholic beverages may enhance toxic effects. Note: Persons sensitive to hydantoin anticonvulsants, barbiturates, succinimides, or oxazolinediones may experience cross-sensitivity to this material				
<b>Warning Symbols</b>				

### Section IV - First Aid Measures

<b>Skin Contact</b> For minor skin contact, avoid spreading material on unaffected skin. Wash with mild soap and water.	
<b>Eye Contact</b> In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.	
<b>Inhalation</b> Move victim to fresh air. Apply artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.	
<b>Ingestion</b> Call a physician or Poison Control Center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.	
<b>Antidotes</b>	<b>Other Measures</b> Call 911 or emergency medical service. Remove and isolate contaminated clothing and shoes.  Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask with one way valve or other proper respiratory medical device.  Use during pregnancy is contraindicated. Keep victim warm and quiet. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. See clinical drug insert information for treatment of overdose.

## Section V - Fire Fighting Measures

Flammable YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		If yes, under which conditions?	
Means of Extinction Use water or a type ABC multi-purpose extinguisher.			
Flashpoint (°C.) and Method Non-flammable		Upper flammable limit (% by volume) Not Applicable	Lower flammable limit (% by volume) Not Applicable
Auto ignition (°C.) None		Explosion Data – Impact None	Explosion Data – Static Discharge None
Hazardous Combustion Products None			
Fire Fighting Recommendations (specific if necessary) As with any fire, evacuate personnel to a safe area. Fire-fighters should wear self-contained breathing apparatus to avoid smoke inhalation. Product is aqueous- based and is not expected to present a fire hazard concern.			

## Section VI - Accidental Release Measures

Leak and Spill Procedures Prevent further leakage or spillage if safe to do so. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
General Precautions (Fire, Environmental and Personal) Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing
Decontamination Soak up with absorbent material. Keep in suitable and closed containers for disposal. Clean contaminated surface thoroughly. After cleaning, flush away traces with water

## Section VII - Handling & Storage

Handling Procedures & Equipment Handle in accordance with good industrial hygiene and safety practices. Avoid contact with skin and eyes. Do not breathe vapors or spray mist.
Storage Requirements Store under refrigeration at 2°C to 8°C (36°F to 46°F). Keep away from heat. Protect from light. Keep out of the reach of children

## Section VIII - Exposure Controls & Personal Protection

Exposure Limits ACGIH TLV <input type="checkbox"/> OSHA PEL <input type="checkbox"/> Other (specify) <input type="checkbox"/>
Specific Engineering Controls (ventilation, enclosed process, etc) Showers, eyewash stations, and ventilation systems.
Personal Protective Equipment Gloves <input checked="" type="checkbox"/> Respirator <input checked="" type="checkbox"/> Eye <input checked="" type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input checked="" type="checkbox"/> Other <input type="checkbox"/>
Specify type of checked equipment <b>Respiratory Protection:</b> If irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations. <b>Ventilation:</b> Handle product in a well-ventilated area. <b>Protective Gloves:</b> Impervious gloves <b>Eye Protection:</b> Safety glasses with side-shields. <b>Other Protective Clothing or Equipment:</b> Lab coat

Hygiene Measures  
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.

### Section IX - Physical & Chemical Properties

Physical State (STP) Liquid	Odour & Appearance Clear, colorless to yellow, odorless	Odour Threshold (ppm)
Specific Gravity Approximate to water	Vapour Density (air=1) Approximate to water	Vapour Pressure (mmHg) Approximate to water
Evaporation Rate Unknown	Boiling Point (°C.) 100°C/ 212°F	Freezing Point (°C.)
pH 8.3-9.3	Coefficient of Water/Oil distribution	Solubility in water Soluble in water

### Section X - Stability & Reactivity Data

Chemical Stability  YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	If no, under which conditions?
Incompatibility with other substances  YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	If yes, which ones? Strong oxidizing agents, acids and bases
Reactivity and under what conditions	
Hazardous Decomposition Products None known based on information supplied.	
Hazardous Polymerization Hazardous polymerization does not occur.	
Conditions to Avoid Exposure to light. Excessive heat.	

### Section XI - Toxicological Information

Effects of acute exposure				
	Chemical Name	LD50 Oral	LD50 Dermal	LD50IV
	Fosphenytoin	NA	NA	235 mg/kg (rat)
	Tromethamine	59900 mg/kg (rat)	NA	NA
Effects of chronic exposure				
<p><b>Chronic Toxicity:</b> Chronic adverse effects may include bleeding, tender and enlarged gums, muscle pain, enlargement of facial features, swelling of breasts in males, excessive hair growth on body and face, and insomnia. Formate and phosphate metabolites of fosphenytoin may contribute to overdose toxicity. Formate toxicity is associated with severe anion-gap metabolic acidosis. Hypocalcemia may result from large increases in phosphate concentrations.</p> <p><b>Carcinogenicity:</b> Phenytoin is the active metabolite of fosphenytoin. Phenytoin has been classified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B), and listed by the National Toxicology Program (NTP) as reasonably anticipated to be a human carcinogen.</p> <p><b>Mutagenic Effects:</b> None known</p> <p><b>Reproductive Toxicity:</b> Contains ingredients that are suspected reproductive hazards. It has been reported in the clinical literature that the use of hydantoin anticonvulsants during pregnancy may result in adverse effects on fetal growth and development.</p> <p><b>Target Organ Effects:</b> Kidney, liver, blood, central nervous system (CNS), and cardiovascular system.</p> <p><b>Other Adverse Effects:</b> Use during pregnancy is contraindicated. Use of hydantoin anticonvulsants prior to delivery may cause bleeding problems in the mother and newborn.</p> <p><b>Endocrine Disruptor Information:</b> This product does not contain any known or suspected endocrine disruptors.</p>				
Irritancy of Product				
Skin Sensitization		Respiratory Sensitization		
Carcinogenicity IARC <input checked="" type="checkbox"/> ACGIH <input type="checkbox"/> Other <input type="checkbox"/>		Explanation Phenytoin is the active metabolite of fosphenytoin. Phenytoin has been classified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B), and listed by the National Toxicology Program (NTP) as reasonably anticipated to be a human carcinogen.		

<p>Reproductive Toxicity Contains ingredients that are suspected reproductive hazards. It has been reported in the clinical literature that the use of hydantoin anticonvulsants during pregnancy may result in adverse effects on fetal growth and development.</p>	<p>Teratogenicity</p>
<p>Embriotoxicity</p>	<p>Mutagenicity None known</p>
<p>Name of synergistic Products/Effects</p>	

## Section XII - Ecological Information

<p>Aquatic Toxicity &amp; other Environmental Issues Information is currently not available on the environmental impact of Fosphenytoin Sodium Injection. Handle in a manner to prevent spills or releases to the environment.</p> <p>No component of this product is listed as a marine pollutant.</p>
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## Section XIII - Disposal Considerations

<p>Waste Disposal This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, or local regulations for additional requirements.</p>
<p>Contaminated Packaging Dispose of in accordance with local regulations.</p>

## Section XIV - Transport Information

<p>Special Shipping Information (general) Fosphenytoin Sodium Injection, USP is not a DOT hazardous material. Not regulated by TDG, MEX, ICAO, IATA, IMDG/IMO, RID, ADR, ADN</p>
<p>Specific Local Transport Information or Classifications</p>

## Section XV - Regulatory Information

<p>General Regulatory Information SARA 313 listed?: NO CERCLA listed?: NO RCRA listed?: NO</p>
<p>Specific Local Regulatory Information or Classification</p>
<p><b>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by CPR.</b></p>

## Section XVI - Other Information

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1. Use of this product should be through or under the direction of a physician.  
This MSDS does not address the therapeutic use of this material.
2. Persons administering this drug to patients must be careful to avoid needle sticks from syringes and other sharp used in the administration. All needle sticks must be reported to your company management.
3. Fosphenytoin Sodium Injection may be considered a Hazardous Drug as described in the [NIOSH Alert: Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings](#). Employees who prepare or administer hazardous drugs or who work in areas where these drugs are used should follow specific handling guidelines in order to prevent exposure to these agents in the air or on work surfaces, clothing, or equipment.
4. **Published guidance on the handling and transport of cytotoxic drugs:**  
NIOSH Alert – Preventing occupational exposures to antineoplastic and other hazardous drugs in health care settings  
<http://www.cdc.gov/niosh/docs/2004-165/>  
National Study Commission on Cytotoxic Exposure: Recommendation for handling Cytotoxic Agents:  
<http://www.nih.gov/od/ors/ds/pubs/cyto/index.htm>

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