MATERIAL SAFETY DATA SHEET

Product Name: Diazepam Injection, USP

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer Name And Address	Hospira Inc. 275 North Field Drive Lake Forest, Illinois USA 60045
Emergency Telephone	CHEMTREC: North America: 800-424-9300; International 1-703-527-3887; Australia - 61-290372994; UK - 44-870-8200418
Hospira, Inc., Non-Emergency	224-212-2000
Product Name	Diazepam Injection, USP
Synonyms	7-Chloro-1,3-dihydro-1-methyl-5-phenyl-2H-1,4-benzodiazepin-2-one

2. COMPOSITION/INFORMATION ON INGREDIENTS

Active Ingredient Name	Diazepam
Chemical Formula	$C_{16}H_{13}ClN_2O$
Preparation	Non-hazardous ingredients include Water for Injection (48%, w/w). Five percent sodium benzoate and/or benzoic acid added as buffers.

Component	Approximate Percent by Weight	CAS Number	RTECS Number
Benzyl Alcohol	1.5	100-51-6	DN3150000
Diazepam	0.5	439-14-5	DF1575000
Propylene Glycol	40	57-55-6	TY2000000
Ethyl Alcohol	10	64-17-5	KQ6300000

3. HAZARD INFORMATION

Carcinogen List

Substance	IARC	NTP	OSHA
Benzyl Alcohol	Not Listed	Not Listed	Not Listed
Diazepam	3	Not Listed	Not Listed
Ethyl Alcohol	Not Listed	Not Listed	Not Listed
Propylene Glycol	Not Listed	Not Listed	Not Listed

Emergency Overview

Diazepam Injection, USP, is a solution containing diazepam, a benzodiazepine used to relieve anxiety and provide sedation. In the workplace, this product should be considered a combustible liquid. Further, diazepam should be considered a potent drug, potentially irritating to the eyes and respiratory tract, and a potential occupational reproductive hazard. Possible target organs include the central nervous system, gastrointestinal system, genitourinary system, cardiovascular system, eyes, skin, and possibly the fetus.

Occupational Exposure Potential

Information on the absorption of this product via inhalation or skin contact is not available. Published reports have indicated that diazepam has some potential to be absorbed through intact skin. Avoid liquid aerosol generation and skin contact.

Signs and Symptoms	During occupational use, this product should be considered potentially irritating to the eyes and respiratory tract. In clinical use, common adverse effects include drowsiness, sedation, muscle weakness, and ataxia. Less frequent adverse effects include vertigo, headache, confusion, depression, slurred speech or dysarthria, changes in libido, tremor, visual disturbances, urinary retention or incontinence, gastrointestinal disturbances, decreased blood pressure, changes in salivation, and amnesia.
Medical Conditions Aggravated by Exposure	Pre-existing hypersensitivity to diazepam or other ingredients in this product. Preexisting central nervous system, gastrointestinal system, genitourinary system, cardiovascular system, eye, or skin ailments; pregnancy.

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. Manifestations of diazepam overdosage include somnolence, confusion, coma and diminished reflexes. Respiration, pulse and blood pressure should be monitored, as in all cases of drug overdosage, although, in general, these effects have been minimal following overdosage. General supportive measures should be employed. Intravenous fluids should be administered and an adequate airway maintained. Hypotension may be managed by the use of Levophed® (levarterenol) or Aramine® (metaraminol). Dialysis is of limited value. Flumazenil, a specific benzodiazepine-receptor antagonist, is indicated for the complete or partial reversal of the sedative effects of benzodiazepines and may be used in situations when an overdose with a benzodiazepine is known or suspected. Prior to the administration of flumazenil, necessary measures should be instituted to secure airway, ventilation and intravenous access. Flumazenil is intended as an adjunct to, not as a substitute for, proper management of benzodiazepine overdose. Patients treated with flumazenil should be monitored for resedation, respiratory depression and other residual benzodiazepine effects for an appropriate period after treatment. The prescriber should be aware of a risk of seizure in association with flumazenil treatment, particularly in long-term benzodiazepine users and in cyclic antidepressant overdose.

5. FIRE FIGHTING MEASURES

Flammability	Flash Point: 50°C (122°F).
Fire & Explosion Hazard	Combustible liquid. Keep away from flames, sparks, or other sources of ignition. When heated, product may produce combustible vapors due to the alcohol content.
Extinguishing media	As with any fire, use extinguishing media appropriate for primary cause of fire.

Special Fire Fighting Procedures	No special provisions required beyond normal firefighting equipment such as flame and chemical resistant clothing and self contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Spill Cleanup and Disposal	Isolate area around spill. Remove potential sources of ignition in the spill area. Put on suitable protective clothing and equipment as specified by site spill procedures. Absorb the liquid with suitable material and clean affected area with soap and water. Dispose of spill materials according to the applicable federal, state, or local regulations.

7. HANDLING AND STORAGE

Handling	No special handling required for hazard control under conditions of normal product use.
Storage	No special storage required for hazard control. For product protection, follow storage recommendations noted on the product case label, the primary container label, or the product insert.
Special Precautions	No special precautions required for hazard control.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

	Exposure limits				
Component	**Type**	**mg/m3**	**ppm**	**µg/m3**	**Note**
Ethyl Alcohol	ACGIH 8 Hr TLV	N/A	1000	N/A	
Ethyl Alcohol	US OSHA 8 Hr PEL	N/A	1000	1900	
Ethyl Alcohol	Australia NOHSC	N/A	1000	N/A	
Propylene Glycol	AIHA WEEL	10	N/A	N/A	8hr TWA
Benzyl Alcohol	AIHA WEEL	N/A	10	N/A	8-hr TWA
Diazepam	Not Applicable	N/A	N/A	N/A	None Established

Respiratory protection	Respiratory protection is normally not needed during intended product use. However, if the generation of aerosols or vapors is likely, and engineering controls are not considered adequate to control potential airborne exposures, the use of an approved air-purifying respirator with a HEPA cartridge (N95 or equivalent) with an organic vapor cartridge is recommended under conditions where airborne aerosol or vapor concentrations are not expected to be excessive. For uncontrolled release events, or if exposure levels are not known, provide respirators that offer a high protection factor such as a powered air purifying respirator or supplied air. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions require respirator use. Personnel who wear respirators should be fit tested and approved for respirator use as required.
Skin protection	If skin contact with the product formulation is likely, the use of latex or nitrile gloves is recommended.
Eye protection	Eye protection is normally not required during intended product use. However, if eye contact is likely to occur, the use of chemical safety goggles (as a minimum) is recommended.
Engineering Controls	Engineering controls are normally not needed during the anticipated use of this product.

9. PHYSICAL/CHEMICAL PROPERTIES

Appearance/Physical State	Liquid
Color	Clear, colorless to slightly yellow
Odor	NA
Odor Threshold:	NA
pH:	6.2 - 6.9
Melting point/Freezing point:	Not determined
Initial Boiling Point/Boiling Point Range:	98°C
Evaporation Rate:	Not determined
Flammability (solid, gas):	NA
Upper/Lower Flammability or Explosive Limits:	LEL: 3.3% based on ethanl; UEL: 19% based on ethanol
Vapor Pressure:	43 mm Hg at 23°C for ethyl alcohol
Vapor Density:	1.59 for ethyl alcohol; 2.6 for propylene glycol
Specific Gravity:	1.0349
Solubility:	Water; slightly soluble in alcohol
Partition coefficient: n-octanol/water:	NA
Auto-ignition temperature:	NA
Decomposition temperature:	NA

10. STABILITY AND REACTIVITY

Reactivity	Not determined.
Chemical Stability	Stable under standard use and storage conditions.
Hazardous Reactions	Not determined.
Conditions to avoid	Not determined.
Incompatibilities	Strong oxidizers, acids.
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 hydrogen chloride.
Hazardous Polymerization	Not anticipated to occur with this product.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
Not determined for the product formulation. Information for the ingredients is as follows:

Ingredient(s)	Percent	Test Type	Route of Administration	Value	Units	Species
Diazepam	100%	LD50	Oral	249, 352, 710, 1240, 48, 278, 720, 328;	mg/kg	Rat, Mouse, Rabbit
Diazepam	100%	LD50	Dermal	800	mg/kg	Mice
Benzyl Alcohol	100%	LD50	Oral	1040-2500	mg/kg	Rat, Mouse, Rabbit, Guinea Pig
Benzyl Alcohol	100%	LD50	Dermal	2000	mg/kg	Rabbit
Benzyl Alcohol	100%	LC50	Inhalation	1000	ppm	Rat
Ethyl Alcohol	100%	LD50; LD50	Oral	3450-11,500	mg/m3	Guinea Pig, Rat, Mouse, Dog
Ethyl Alcohol	100%	LC50 (10h)	Inhalation	20,000	ppm	Rat
Ethyl Alcohol	100%	LC50 (4h)	Inhalation	39,000	mg/m3	Mouse
Propylene Glycol	100%	LD50	Oral	10400 - 29536	mg/kg	Rat, Mouse, Rabbit, Dog, Guinea Pig
Propylene Glycol	100%	LD50	Dermal	20800	mg/kg	Rabbit

Aspiration Hazard None anticipated from normal handling of this product.

Dermal Irritation/Corrosion None anticipated from normal handling of this product. Ethanol may produce mild skin irritation with redness and dryness.

Ocular Irritation/Corrosion None anticipated from normal handling of this product. Inadvertent contact of this product with eyes may produce irritation. Exposure to ethanol has produced severe eye irritation in studies in animals.

Dermal or Respiratory Sensitization None anticipated from normal handling of this product.

Reproductive Effects A series of reproduction studies was conducted in rats with diazepam at oral dosages of 1, 10, 80 and 100 mg/kg given for periods ranging from 60−228 days prior to mating. At 100 mg/kg, there was a decrease in the number of pregnancies and surviving offspring in these rats. These effects were attributed to prolonged sedative activity, resulting in lack of interest in mating and lessened maternal nursing and care of the young. Neonatal survival of rats at dosages lower than 100 mg/kg was within normal limits. Several neonates in both controls and treated groups showed skeletal or other defects. Further studies in rats at doses up to and including 80 mg/kg/day did not reveal significant teratological effects on the offspring. Rabbits were given dosages of 1, 2, 5 and 8 mg/kg from day 6 through day 18 of gestation. No adverse effect on reproduction and no teratological changes were noted. In another study, no evidence of teratogenicity was observed in the offspring of rabbits treated with oral doses up to 30 mg/kg/day during gestation days 7 through 19. In other studies, Swiss-Webster mice were treated orally with 50, 100, 140, or 500 mg/kg diazepam daily for three days on gestation days 8-10 or days 11-13, or

for one day only between days 8 and 15 or with 280 or 400 mg/kg for one day only between days 11 and 14. The highest dosage was associated with a maternal mortality rate of 50%. When 140 mg/kg diazepam was administered on day 13, there was 21% fetal resorption. The incidence of cleft palate was significantly increased in the offspring of mice treated with 140 mg/kg diazepam on days 11, 12, and 13, and with singleday administration of 400 mg/kg on days 11-14 and 500 mg/kg on days 9 and 11-15. In another study in hamsters, exencephaly, cleft palate, and limb defects were detected after a single oral dose of 30, 50, 70, or 100 mg on days 8 and 10, or single iv injections of 10 mg diazepam on day 11. There was no dose-related effect. Ethyl alcohol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Chronic prenatal exposure to ethanol has been associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome".

Mutagenicity

Diazepam is generally negative in the Ames test for mutagenicity. It produced chromosomal aberrations in an in vitro micronucleus assay in V79 cells. It also produced chromosomal aberrations in an in vivo micronucleus assay and sister chromatid exchange assay in mice.

Carcinogenicity

No statistically significant evidence of tumorigenicity was observed in rats when administered as a dietary admix at doses o f 1, 15, and 100 mg/kg/day, rising t o 225 mg/kg/day by week 13, over a period o f 2 years.

Target Organ Effects

Based on clinical use, possible target organs include the central nervous system, gastrointestinal system, genitourinary system, cardiovascular system, eyes, skin, and possibly the fetus.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity

Not determined for the product. Information for ingredients is provided below:

*LC50(96 hr) = 84 mg/L in rainbow trout for diazepam
*EC50(24 hr) = 4.3 - 14 mg/L in Daphnia magna for diazepam
*EC50(72 hr) = 3.11 - 11.9 mg/L in algae for diazepam

LC50(24 hr) = 12,900 - 15,300 mg/L in rainbow trout for ethanol
LC50 (24 hr) = 11,200 mg/L in fingerling trout for ethanol
LC50(48 hr) = 9,268 - 14,221 mg/L in Daphnia magna for ethanol
EC50 = 9310 mg/L in Chlorella pyrenoidosa (green algae) for ethanol

LC50(96 hr) = 460 mg/L in Pimephales promelas for benzyl alcohol
LC50 = 640 mg/L in Leuciscus idus for benzyl alcohol
EC50(24 hr) = 400 mg/L in Daphnia magna for benzyl alcohol
EC50 = 95 mg/L in Chlorella pyrenoidosa for benzyl alcohol

LC50(96 hr) = 51,600 mg/L in rainbow trout for propylene glycol
LC50(48 hr) = 34,400 - 43,500 mg/L in Daphnia magna for propylene glycol
EC50(14 day) = 19,000 mg/L in algae for propylene glycol

Persistence/Biodegradability

Not determined for the product. Information for ingredients is provided below:

*Diazepam is not inherently biodegradable; it degraded less than 5% in an 84-day biodegradation assay. Diazepam degraded approximately 25% in 120 hours in an abiotic degradation assay.

Ethanol was reported to be degraded between 45% and 74% in five days in two aqueous biodegradation assays.

Benzyl alcohol was degraded over 90% in a 28-day biodegradaton assay in sewage sludge.

Propylene glycol was reported to be 100% biodegradable after 24-hours in activated sludge.

Bioaccumulation Not determined for the product. Because of its low octanol:water partition coefficient, ethanol is not anticipated to bioaccumulate.

Mobility in Soil Not determined

13. DISPOSAL CONSIDERATIONS

Waste Disposal Disposal should be performed in accordance with the federal, state or local regulatory requirements. Product is classified as hazardous waste (D001) based on flashpoint testing.

Container Handling and Disposal Dispose of container and unused contents in accordance with federal, state and local regulations.

14. TRANSPORTATION INFORMATION

ADR/ADG/ DOT STATUS: Not regulated

IMDG STATUS: Not regulated

ICAO/IATA STATUS: Not regulated

Transport Comments: None

15. REGULATORY INFORMATION

USA Regulations

Substance	TSCA Status	CERCLA Status	SARA 302 Status	SARA 313 Status	PROP 65 Status
Benzyl Alcohol	Listed	Not Listed	Not Listed	Not Listed	Not Listed
Diazepam	Listed	Not Listed	Not Listed	Not Listed	Listed
Ethyl Alcohol	Listed	Not Listed	Not Listed	Not Listed	Listed
Propylene Glycol	Listed	Not Listed	Not Listed	Not Listed	Not Listed

RCRA Status Classified as D001 hazardous waste based on ignitability.

U.S. OSHA Classification
Target Organ Toxin
Reproductive Toxin
Possible Irritant
Combustible Liquid

GHS Classification *In the EU, classification under GHS/CLP does not apply to certain substances and mixtures, such as medicinal products as defined in Directive 2001/83/EC, which are in the finished state, intended for the final user:

Hazard Class	Not Applicable
Hazard Category	Not Applicable
Signal Word	Not Applicable
Symbol	Not Applicable
Prevention	P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
Hazard Statement	Not Applicable
Response:	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. Wash hands after handling. Get medical attention if you feel unwell.

EU Classification*

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

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Classification(s):	Not Applicable
Symbol:	Not Applicable
Indication of Danger:	Not Applicable
Risk Phrases:	Not Applicable
Safety Phrases:	S23 - Do not breathe vapor. S24/25 - Avoid contact with skin and eyes. S37/39 - Wear suitable 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
LD50	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

MSDS Coordinator: Hospira GEHS
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