

1. Identification

Product identifier	Isradipine	
Other means of identification		
Catalog number	1354207	
Chemical name	3,5-Pyridinedicarboxylic acid, 4-(4-benzofurazanyl)-1,4-dihydro-2,6-dimethyl-, methyl 1-methylethyl ester, (+/-)-	
Recommended use	Specified quality tests and assay use only.	
Recommended restrictions	Not for use as a drug. Not for administration to humans or animals.	
Manufacturer/Importer/Supplier/Distributor information		
Company name	U. S. Pharmacopeia	
Address	12601 Twinbrook Parkway Rockville MD 20852-1790 US	
Telephone	RS Technical Services	301-816-8129
Website	www.usp.org	
E-mail	RSTECH@usp.org	
Emergency phone number	CHEMTREC within US & Canada	1-800-424-9300
	CHEMTREC outside US & Canada	+1 703-527-3887

2. Hazard(s) identification

Note	This product is supplied in a small quantity which does not constitute a combustible dust hazard. The physical properties of this material indicate that in large quantities accumulated dust may be hazardous.
Physical hazards	Not classified.
Health hazards	Not classified.
OSHA hazard(s)	Not classified.
Label elements	
Hazard symbol	No symbol.
Signal word	Not available.
Hazard statement	Not available.
Precautionary statement	
Prevention	Not available.
Response	Not available.
Storage	Not available.
Disposal	Not available.
Hazard(s) not otherwise classified (HNOC)	Not classified.

3. Composition/information on ingredients

Substance

Hazardous components

Chemical name	Common name and synonyms	CAS number	%
Isradipine		75695-93-1	100

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Rinse skin with water/shower. Get medical attention if irritation develops and persists.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.

Most important symptoms/effects, acute and delayed

Hypotension. Heart rhythm abnormalities.

Indication of immediate medical attention and special treatment needed

Treatment of calcium-channel blocker overdose should be symptomatic and supportive and may include the following: 1. Administer activated charcoal and consider gastric lavage. 2. Hypotension secondary to reduced systemic resistance and lowered cardiac output may require fluid replacement, Trendelenburg positioning, and vasoconstriction with norepinephrine or high-dose dopamine. Calcium may also help, especially when depressed cardiac contractility is contributory. Glucagon may improve perfusion pressure by stimulating cardiac output. Pacing may be required. 3. Conduction deficits and bradydysrhythmias do not need specific treatment if they are not felt to be contributing to continuing hypotension. Antidotal therapy should include calcium (as the chloride) and/or atropine initially, followed by isoproterenol and/or pacing for resistant or nonresponsive cases. 4. Seizures should be treated with diazepam initially, progressing to phenobarbital for nonresponsive cases. Correct underlying metabolic acidosis, hypoxia, and hypotension. 5. Pulmonary edema is a potential complication, especially with rapid return to normalized vascular tone in combination with aggressive fluid therapy. 6. Due to protein binding, dialysis and hemoperfusion are not effective. 7. Monitor ECG and vital signs frequently. [Poisindex, PDR, Poisoning and Drug Overdose]

General information

Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention.

5. Fire-fighting measures

Suitable extinguishing media

Use fire-extinguishing media appropriate for surrounding materials. Water. Foam. Dry chemical or CO2.

Unsuitable extinguishing media

None known.

Specific hazards arising from the chemical

Explosion hazard: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard.

Special protective equipment and precautions for firefighters

Wear suitable protective equipment.

Fire-fighting equipment/instructions

Use water spray to cool unopened containers. As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.

Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Avoid inhalation of dust from the spilled material. Wear appropriate personal protective equipment.

Methods and materials for containment and cleaning up

Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid the generation of dusts during clean-up. For waste disposal, see section 13 of the SDS. Clean surface thoroughly to remove residual contamination.

7. Handling and storage

Precautions for safe handling

As a general rule, when handling USP Reference Standards, avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly. Combustible dust clouds may be created where operations produce fine material (dust). Avoid significant deposits of material, especially on horizontal surfaces, which may become airborne and form combustible dust clouds and may contribute to secondary explosions.

Conditions for safe storage, including any incompatibilities

Store in tight container as defined in the USP-NF. This material should be handled and stored per label instructions to ensure product integrity.

8. Exposure controls/personal protection

Exposure limit values

Industrial Use

Material	Type	Value
Isradipine (CAS 75695-93-1)	TWA	0.012 mg/m3

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls	Airborne exposure should be controlled primarily by engineering controls such as general dilution ventilation, local exhaust ventilation, or process enclosure. Local exhaust ventilation is generally preferred to general exhaust because it can control the contaminant at its source, preventing dispersion into the work area. An industrial hygiene survey involving air monitoring may be used to determine the effectiveness of engineering controls. Effectiveness of engineering controls intended for use with highly potent materials should be assessed by use of nontoxic surrogate materials. Local exhaust ventilation such as a laboratory fume hood or other vented enclosure is recommended, particularly for grinding, crushing, weighing, or other dust-generating procedures.
Individual protection measures, such as personal protective equipment	
Eye/face protection	Safety glasses with sideshields are recommended. Face shields or goggles may be required if splash potential exists or if corrosive materials are present. Approved eye protection (e.g., bearing the ANSI Z87 or CSA stamp) is preferred. Maintain eyewash facilities in the work area.
Skin protection	
Hand protection	Chemically compatible gloves. For handling solutions, ensure that the glove material is protective against the solvent being used. Use handling practices that minimize direct hand contact. Employees who are sensitive to natural rubber (latex) should use nitrile or other synthetic nonlatex gloves. Use of powdered latex gloves should be avoided due to the risk of latex allergy.
Other	For handling of laboratory scale quantities, a cloth lab coat is recommended. Where significant quantities are handled, work clothing may be necessary to prevent take-home contamination.
Respiratory protection	Where respirators are deemed necessary to reduce or control occupational exposures, use NIOSH-approved respiratory protection and have an effective respirator program in place (applicable U.S. regulation OSHA 29 CFR 1910.134).
Thermal hazards	Not available.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	Yellow powder.
Physical state	Solid.
Form	Powder.
Odor	Odorless or faint odor.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	330.8 - 338 °F (166 - 170 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	< 0.0000001 kPa at 25 °C
Vapor density	Not available.
Relative density	Not available.
Solubility in water	Practically insoluble.
Partition coefficient (n-octanol/water)	4.21 = Log Pow (at 22 °C)
Auto-ignition temperature	680 °F (360 °C) (BAM)
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Chemical family	Benzofurazan pyridine derivative.
Molecular weight	371.39
Solubility (other)	Soluble in ethanol; freely soluble in acetone, in chloroform, and in methylene chloride.

10. Stability and reactivity

Reactivity	No reactivity hazards known.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	None known.
Incompatible materials	Strong oxidizing agents. Strong acids. Strong bases. Peroxides.
Hazardous decomposition products	NOx. Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Based on available data, the classification criteria are not met.
Inhalation	Due to lack of data the classification is not possible.
Skin contact	Due to lack of data the classification is not possible.
Eye contact	Due to lack of data the classification is not possible.

Symptoms related to the physical, chemical, and toxicological characteristics Calcium channel blocking agents: Dizziness. Tiredness. Headache. Sleep disturbances. Fast, pounding, slow, or irregular heartbeat. Swelling of legs. Weakness. Muscle cramps. Flushing. Nausea. Heartburn. Constipation. Diarrhea. Skin rash. Itching. Swollen or bleeding gums. Coughing. Difficulty breathing. Sore throat.

Delayed and immediate effects of exposure Calcium channel blocking agents: Low blood pressure. Pulmonary edema. Cardiac dysrhythmias. Hyperglycemia. Circulatory problems. Metabolic acidosis.

Medical conditions aggravated by exposure Porphyria.
Calcium channel blocking agents: Heart failure. Kidney disease. Liver disease. Blood vessel disorders. Gastroesophageal reflux. Hypotension. Peripheral edema. Diabetes.

Acute toxicity Based on available data, the classification criteria are not met.

Product	Species	Test Results
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Isradipine (CAS 75695-93-1)

Acute

Oral

LD50	Mouse	216 mg/kg
	Rat	> 3 g/kg

Skin corrosion/irritation Due to lack of data the classification is not possible.

Serious eye damage/eye irritation Due to lack of data the classification is not possible.

Respiratory sensitization Due to lack of data the classification is not possible.

Skin sensitization Due to lack of data the classification is not possible.

Germ cell mutagenicity Due to lack of data the classification is not possible.
Data from germ cell mutagenicity tests were not found.
Mutagenicity studies were negative.

Carcinogenicity Based on available data, the classification criteria are not met.
This material is not considered to be a carcinogen by IARC, NTP, or OSHA.
Several case-control studies have shown that use of calcium antagonists is not associated with a statistically significant increased risk of developing cancer as compared with non-users of calcium antagonists.

2.5 - 62.5 mg/kg/day Carcinogenicity study, administered in diet.

Result: Dose-dependent increase in benign Leydig-cell tumors and testicular hyperplasia.

Species: Rat

Test Duration: 2 years

2.5 - 80 mg/kg/day Carcinogenicity study, administered in diet.

Result: No evidence of oncogenicity.

Species: Mouse

Test Duration: 2 years

Reproductive toxicity Based on available data, the classification criteria are not met.
In animals, many of the processes of embryogenesis appear to be calcium-dependent, and there are theoretical concerns about use of calcium channel blockers by humans in early pregnancy. However, epidemiological studies have not shown an association between therapeutic use of calcium channel blocking agents during pregnancy and an increased incidence of birth defects.

Reproductivity

1 - 10 mg/kg/day Reproductivity and development study, administered orally during organogenesis.
Result: No teratogenicity. Maternal toxicity and fetotoxicity at two highest doses.

Species: Rabbit

6 - 60 mg/kg/day Reproductivity and development study, administered orally during organogenesis.

Result: No adverse effects on the fetuses. Maternal toxicity at high dose.

Species: Rat

60 mg/kg/day Fertility study

Result: No effect on fertility.

Species: Rat

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Specific target organ toxicity - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Based on available data, the classification criteria are not met.

12. Ecological information

Ecotoxicity

Product		Species	Test Results
Isradipine (CAS 75695-93-1)			
<i>Acute</i>			
Algae	IC50	Algae	0.98 - 1.2 mg/l, 72 hours
Crustacea	EC50	Daphnia magna	2.7 mg/l, 48 hours
Aquatic			
<i>Acute</i>			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.076 mg/l, 96 hours

Persistence and degradability Not readily degradable.

Bioaccumulative potential Not available.

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Dispose in accordance with all applicable regulations. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

Local disposal regulations Not available.

Hazardous waste code Not available.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN3077
UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Isradipine)
Transport hazard class(es) 9
Subsidiary class(es) Not available.
Packing group III

IATA

UN number UN3077
UN proper shipping name Environmentally hazardous substance, solid, n.o.s. (Isradipine)
Transport hazard class(es) 9
Subsidiary class(es) -
Packaging group III

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No information available.

DOT; IATA



15. Regulatory information

US federal regulations CERCLA/SARA Hazardous Substances - Not applicable.

One or more components are not listed on TSCA.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

SARA 311/312 Hazardous chemical No

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

Food and Drug Administration (FDA) Not regulated.

US state regulations

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

16. Other information, including date of preparation or last revision

Issue date 02-21-2005

Revision date 03-31-2014

Version # 02

Further information Refer to NFPA 654, Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids, for safe handling.

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Revision Information

This document has undergone significant changes and should be reviewed in its entirety.