

## 1. Identification

<b>Product identifier</b>	<b>Clozapine</b>	
<b>Other means of identification</b>		
<b>Catalog number</b>	1142107	
<b>Chemical name</b>	5H-Dibenzo[b,e][1,4]diazepine, 8-chloro-11-(4-methyl-1-piperazinyl)-	
<b>Recommended use</b>	Specified quality tests and assay use only.	
<b>Recommended restrictions</b>	Not for use as a drug. Not for administration to humans or animals.	
<b>Manufacturer/Importer/Supplier/Distributor information</b>		
<b>Company name</b>	U. S. Pharmacopeia	
<b>Address</b>	12601 Twinbrook Parkway Rockville MD 20852-1790 US	
<b>Telephone</b>	RS Technical Services	301-816-8129
<b>Website</b>	www.usp.org	
<b>E-mail</b>	RSTECH@usp.org	
<b>Emergency phone number</b>	CHEMTREC within US & Canada	1-800-424-9300
	CHEMTREC outside US & Canada	+1 703-527-3887

## 2. Hazard(s) identification

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	Acute toxicity, oral	Category 3
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
<b>OSHA hazard(s)</b>	Not classified.	

### Label elements



<b>Signal word</b>	Danger
<b>Hazard statement</b>	Toxic if swallowed. May cause drowsiness or dizziness.
<b>Precautionary statement</b>	
<b>Prevention</b>	Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Do not eat, drink or smoke when using this product.
<b>Response</b>	Call a poison center/doctor/medical professional. Rinse mouth. If inhaled: Remove person to fresh air and keep comfortable for breathing.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
<b>Disposal</b>	Dispose of contents/container to an approved disposal site.
<b>Hazard(s) not otherwise classified (HNOC)</b>	Not classified.

## 3. Composition/information on ingredients

### Substance

#### Hazardous components

Chemical name	Common name and synonyms	CAS number	%
Clozapine		5786-21-0	100

## 4. First-aid measures

<b>Inhalation</b>	If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
<b>Skin contact</b>	Rinse skin with water/shower. Get medical attention if irritation develops and persists.
<b>Eye contact</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance.

**Most important symptoms/effects, acute and delayed** Central nervous system depression.

**Indication of immediate medical attention and special treatment needed** Treatment of clozapine overdose should be symptomatic and supportive and may include the following: Establish and maintain a patent airway. Ensure adequate oxygenation and ventilation. Induced vomiting is not recommended, due to the potential for CNS depression and seizures. To decrease absorption, administer activated charcoal as a slurry within 6 hours of ingestion. Activated charcoal, which may be used with sorbital, may be more effective than gastric lavage. Consider gastric lavage if it can be performed within 1 hour of ingestion. Protect airway by placement in the Trendelenburg and left lateral decubitus position or by endotracheal intubation. Control any seizures first. Use physostigmine, dihydroergotamine, angiotensin, or norepinephrine to counteract anticholinergic symptoms. Treat hypotension with isotonic fluid infusion. If hypotension persists, administer dopamine or norepinephrine and titrate to desired response. Do NOT use quinidine or procainamide to treat cardiac arrhythmias. For seizures, administer diazepam or lorazepam. Consider phenobarbital or propofol if seizures recur after diazepam. Monitor for elevated liver enzymes, granulocytopenia, tachycardia, antimuscarinic effects, hypotension, dysrhythmias, respiratory depression, and need for endotracheal intubation. Evaluate for hypoglycemia, electrolyte disturbances, and hypoxia. Monitor cardiac and vital signs, especially respiration, for several days because of possibly delayed effects. Provide assisted ventilation, if needed. Forced diuresis, dialysis, hemoperfusion, and exchange transfusion are not likely to be of benefit. [USP DI 2005, Meditext 2009, and PDR 2009]

**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

<b>Suitable extinguishing media</b>	Water spray, dry chemical, carbon dioxide, or foam as appropriate for surrounding fire and materials.
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	No unusual fire or explosion hazards noted.
<b>Special protective equipment and precautions for firefighters</b>	Wear suitable protective equipment.
<b>Fire-fighting equipment/instructions</b>	As with all fires, evacuate personnel to a safe area. Firefighters should use self-contained breathing equipment and protective clothing.
<b>Specific methods</b>	Cool containers exposed to flames with water until well after the fire is out.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	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.
<b>Methods and materials for containment and cleaning up</b>	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. Wash spill site.

## 7. Handling and storage

<b>Precautions for safe handling</b>	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.
<b>Conditions for safe storage, including any incompatibilities</b>	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
Clozapine (CAS 5786-21-0)	TWA	0.1 micrograms/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.

### 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, crystalline powder.

#### Physical state

Solid.

#### Form

Powder.

### Odor

Weak odor.

### Odor threshold

Not available.

### pH

Not available.

### Melting point/freezing point

359.6 - 366.8 °F (182 - 186 °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

Insoluble.

### Partition coefficient (n-octanol/water)

3.23

### Auto-ignition temperature

> 680 °F (> 360 °C)

<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Chemical family</b>	Tricyclic dibenzodiazepine derivative.
<b>Molecular formula</b>	C18H19ClN4
<b>Molecular weight</b>	326.82
<b>Solubility (other)</b>	Soluble in alcohol, in acetone, and in chloroform; sparingly soluble in acetonitrile; freely soluble in methylene chloride.

## 10. Stability and reactivity

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

## 11. Toxicological information

### Information on likely routes of exposure

<b>Ingestion</b>	Toxic if swallowed.
<b>Inhalation</b>	Due to lack of data the classification is not possible.
<b>Skin contact</b>	Due to lack of data the classification is not possible.
<b>Eye contact</b>	Due to lack of data the classification is not possible.

**Symptoms related to the physical, chemical, and toxicological characteristics** Dizziness. Fainting. Fever. Weight gain. Anxiety. Irritability. Restlessness. Confusion. Blurred vision. Tremor. Headache. Constipation. Drowsiness. Salivation. Nausea. Vomiting. Heartburn. Sweating. Nervousness. Hallucinations. Seizures.

**Delayed and immediate effects of exposure** Irregular heartbeat. Change in blood pressure. Cardiac arrest. Coma.

**Medical conditions aggravated by exposure** Impaired kidney function. Myeloproliferative disease. Psychosis. Bone marrow suppression. Liver disease. Central nervous system depression. Blood disorders. Glaucoma. Intestinal obstruction. Enlarged prostate gland. History of seizures.

**Acute toxicity** Toxic if swallowed.

Product	Species	Test Results
Clozapine (CAS 5786-21-0)		
<b>Acute</b>		
<i>Oral</i>		
LD50	Mouse	199 mg/kg
	Rat	260 mg/kg
<b>Skin corrosion/irritation</b>	Due to lack of data the classification is not possible.	
<b>Serious eye damage/eye irritation</b>	Due to lack of data the classification is not possible.	
<b>Respiratory sensitization</b>	Due to lack of data the classification is not possible.	
<b>Skin sensitization</b>	Due to lack of data the classification is not possible.	
<b>Germ cell mutagenicity</b>	Clozapine was not found to be genotoxic or mutagenic when assayed in a battery of bacterial and mammalian tests. Due to lack of data the classification is not possible.	
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Long-term studies in mice and rats at doses approximately 7 times the typical human therapeutic dose on a mg/kg basis did not demonstrate a carcinogenic potential.	
<b>Reproductive toxicity</b>	Based on available data, the classification criteria are not met. The therapeutic use of clozapine does not appear to increase the risk of birth defects in humans.	
<b>Reproductivity</b>		
40 mg/kg/day Reproductivity test (animals)		
Result: No fetal harm was observed.		
<b>Specific target organ toxicity - single exposure</b>	Narcotic effects.	
<b>Specific target organ toxicity - repeated exposure</b>	Due to lack of data the classification is not possible.	

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

## 12. Ecological information

**Ecotoxicity** No ecotoxicity data noted for the ingredient(s).  
**Persistence and degradability** No data is available on the degradability of this product.  
**Bioaccumulative potential** Not available.  
**Mobility in soil** Not available.  
**Other adverse effects** Not available.

## 13. Disposal considerations

**Disposal instructions** This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). 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. Dispose in accordance with all applicable regulations.  
**Local disposal regulations** Not available.  
**Hazardous waste code** Not regulated.  
**Waste from residues / unused products** 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** UN2811  
**UN proper shipping name** Toxic solid, organic, n.o.s. (Clozapine)  
**Transport hazard class(es)** 6.1  
**Subsidiary class(es)** Not available.  
**Packing group** III

### IATA

**UN number** UN2811  
**UN proper shipping name** Toxic solid, organic, n.o.s. (Clozapine)  
**Transport hazard class(es)** 6.1  
**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**

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**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)	Yes
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	Yes
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** 06-17-2009

**Revision date** 06-28-2013

**Version #** 02

**Further information** Not available.

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