

Sildenafil Tablets, USP 25 mg, 50 mg and 100 mg

Revision Date: 27-April-2024 Version 1.0

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND COMPANY UNDERTAKING

Product Name: Sildenafil Tablets, USP 25 mg, 50 mg and 100 mg

Product Information: Sildenafil Tablets, USP

Company Name: Cadila Pharmaceuticals Limited

Address: 1389, Dholka – 382225, District: Ahmedabad, Gujarat State, India.

Phone No.: 02714/221481

Fax No.: 02714/220315

2. HAZARD(S) IDENTIFICATION:

Identification Hazard Non-hazardous in accordance with international standards for

Statements: workplace safety.

Additional Information:

Classification of the Substance or Mixture

GHS - Classification Serious eye damage/eye irritation Category 2B

Label elements

Signal word Warning

Hazard statement H320 - Causes eye irritation

Precautionary statements P264 - Wash hands thoroughly after handling

P305 + P351 +P338: IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

P337 + P313 - If eye irritation persists: Get medical advice/attention

Other Hazards An Occupational Exposure Value has been established for one or more

of the ingredients (see Section 8).

Note: This document has been prepared in accordance with standards for

workplace safety, which require the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your needs may vary depending upon the potential for exposure

in your workplace.



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3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:

5-[2-Ethoxy-5-[(4-methylpiperazin-l-yl)sulfonyl]phenyl]-1-methyl-3-propyl-6,7-dihydro-lH-pyrazolo[4,3-d]pyrimidin-7-one dihydrogen 2-hydroxypropane -1,2,3-tricarboxylate.

or

Piperazine,1-[[3-(6,7-dihydro-1-methyl-7-oxo-3 propyl-1-H-pyrazolo[4,3-d]-pyrimidin-5-y1)-4-ethoxyphenyl]sulfonyl]-4-methyl-,2-hydroxy-1,2,3-propanetricarboxylate (1:1).

or

1-[[3-(6,7-Dihydro-1-methyl-7-oxo-3-propyl-1H-pyrazolo[4,3-d]pyrimidin-5-yl)-4-ethoxyphenyl]sulfonyl]-4-methylpiperazine citrate.

Sildenafil Citrate USP



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Product Code: Not applicable

Hazardous Ingredients / Components: Not Applicable

CAS No.: 171599-83-0

Other Components:

| Inactive Ingredients | Exposure Limit | CAS No. |
|---|-----------------------|------------|
| Microcrystalline Cellulose (Emcocel XLM 90) | Not Found | 9004-34-6 |
| Anhydrous dibasic calcium phosphate (A-TAB) | Not Found | 7757-93-9 |
| Croscarmellose Sodium (Ac-Di-Sol SD-711) | Not Found | 74811-65-7 |
| HPMC 5 CPS (Methocel E5 LV) | Not Found | 9004-65-3 |
| Magnesium Stearate (Veg Grade) | Not Found | 557-04-0 |
| HPMC 2910/ Hypromellose | Not Found | 9004-65-3 |
| Lactose Monohydrate | Not Found | 64044-51-5 |
| Titanium Dioxide | Not Found | 13463-67-7 |
| Triacetin | Not Found | 102-76-1 |
| FD&C blue #2/indigo carmine aluminum lake | Not Found | 16521-38-3 |



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4. FIRST – AID MEASURES

Description of First Aid Measures

Eye Contact: Flush with water while holding eyelids open for at least 15 minutes. Seek medical attention immediately.

Skin Contact: Remove contaminated clothing. Flush area with large amounts of water. Use soap. Seek medical attention.

Ingestion: Never give anything by mouth to an unconscious person. Wash out mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical attention immediately.

Inhalation: Remove to fresh air and keep patient at rest. Seek medical attention immediately.

Most Important Symptoms and Effects, Both Acute and Delayed Symptoms and Effects of Exposure:

For information on potential signs and symptoms of exposure, See Section 2 – Hazards Identification and/or Section 11 - Toxicological Information.

Medical Conditions Aggravated by Exposure: None known.

Indication of the Immediate Medical Attention and Special Treatment Needed Notes to Physician: None.



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5. FIRE FIGHTING MEASURES

Extinguishing Media: Extinguish fires with CO2, extinguishing powder, foam, or water.

Special Hazards Arising from the Substance or Mixture Hazardous Combustion Products:

Formation of toxic gases is possible during heating or fire.

Fire / Explosion Hazards: Fine particles (such as dust and mists) may fuel fires/explosions.

Advice for Fire-Fighters:

During all firefighting activities, wear appropriate protective equipment, including selfcontained breathing apparatus.

Additional Information: Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:

Personnel involved in clean-up should wear appropriate personal protective equipment (see Section 8). Minimize exposure.

Environmental Precautions:

Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release.

Methods and Material for Containment and Cleaning Up Measures for Cleaning / Collecting:

Contain the source of spill if it is safe to do so. Collect spilled material by a method that controls dust generation. A damp cloth or a filtered vacuum should be used to clean spills of dry solids. Clean spill area thoroughly.

Additional Consideration for Large Spills:

Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Clean up operations should only be undertaken by trained personnel.



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7. HANDLING AND STORAGE

Precautions for Safe Handling:

Minimize dust generation and accumulation. If tablets or capsules are crushed and/or broken, avoid breathing dust and avoid contact with eyes, skin, and clothing. When handling, use appropriate personal protective equipment (see Section 8). Wash thoroughly after handling. Releases to the environment should be avoided. Review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure or environmental releases. Potential points of process emissions of this material to the atmosphere should be controlled with dust collectors, HEPA filtration systems or other equivalent controls. Refer to Section 12 - Ecological Information, for information on potential effects on the environment.

Conditions for Safe Storage, Including any Incompatibilities Storage Conditions:

Store as directed by product packaging.

Specific end use(s):

Pharmaceutical drug product

Storage:

Store at 20° to 25°C (68° to 77°F); excursion permitted to 15° to 30°C (59° to 86° F). [See USP Controlled Room Temperature]



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8. EXPOSURE CONTROL / PERSONAL PROTECTION

Control Parameters:

Refer to available public information for specific member state Occupational Exposure Limits.

Sildenafil citrate

| Sildenafil OEL TWA-8 Hr: | $350 \mu g/m^3$ |
|-----------------------------------|-----------------------|
| Titanium dioxide | 330μg/111 |
| i itanium dioxide | |
| ACGIH Threshold Limit Value (TWA) | 10 mg/m^3 |
| Australia TWA | 10 mg/m^3 |
| Austria OEL – MAKs | 5 mg/m^3 |
| Belgium OEL – TWA | 10 mg/m^3 |
| Bulgaria OEL – TWA | 10.0 mg/m^3 |
| Denmark OEL – TWA | 6 mg/m^3 |
| Estonia OEL – TWA | 5 mg/m^3 |
| France OEL - TWA | 10 mg/m^3 |
| Greece OEL – TWA | 10 mg/m^3 |
| | 5 mg/m^3 |
| Ireland OEL - TWAs | 10 mg/m^3 |
| | 4 mg/m^3 |
| Latvia OEL - TWA | 10 mg/m^3 |
| Lithuania OEL – TWA | 5 mg/m^3 |
| OSHA - Final PELS - TWAs: | 15 mg/m^3 |
| Poland OEL - TWA | 10.0 mg/m^3 |
| Portugal OEL – TWA | 10 mg/m^3 |
| Romania OEL - TWA | 10 mg/m^3 |



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| Revision Date: 27-April-2024 Russia OEL - TWA | Version 1.0 10 mg/m ³ |
|--|----------------------------------|
| Spain OEL - TWA | 10 mg/m^3 |
| Sweden OEL - TWAs | 5 mg/m^3 |
| Switzerland OEL -TWAs | 3 mg/m^3 |
| Vietnam OEL - TWAs | 6 mg/m^3 |
| | 5 mg/m^3 |
| Calcium phosphate dibasic, anhydrous | |
| Latvia OEL - TWA | 10 mg/m^3 |
| Microcrystalline cellulose | |
| ACGIH Threshold Limit Value (TWA) | 10 mg/m^3 |
| Australia TWA | 10 mg/m^3 |
| Belgium OEL - TWA | 10 mg/m^3 |
| Estonia OEL - TWA | 10 mg/m^3 |
| France OEL - TWA | 10 mg/m^3 |
| Ireland OEL - TWAs | 10 mg/m^3 |
| | 4 mg/m^3 |
| Latvia OEL - TWA | 2 mg/m^3 |
| OSHA - Final PELS - TWAs: | 15 mg/m^3 |
| Portugal OEL - TWA | 10 mg/m^3 |
| Romania OEL - TWA | 10 mg/m^3 |
| Russia OEL - TWA | 6 mg/m^3 |
| Spain OEL - TWA | 10 mg/m^3 |
| Switzerland OEL -TWAs | 3 mg/m^3 |
| Vietnam OEL - TWAs | 10 mg/m^3 |
| | 5 mg/m^3 |



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Magnesium stearate

ACGIH Threshold Limit Value (TWA) 10 mg/m³

Lithuania OEL - TWA 5 mg/m³

Sweden OEL - TWAs 5 mg/m³

Exposure Controls Engineering Controls:

Engineering controls should be used as the primary means to control exposures. General room ventilation is adequate unless the process generates dust, mist or fumes. Keep airborne contamination levels below the exposure limits listed above in this section.

Personal Protective Equipment:

Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE). Contact your safety and health professional or safety equipment supplier for assistance in selecting the correct protective clothing/equipment based on an assessment of the workplace conditions, other chemicals used or present in the workplace and specific operational processes.

Hands:

Impervious gloves (e.g. Nitrile, etc.) are recommended if skin contact with drug product is possible and for bulk processing operations. (Protective gloves must meet the standards in accordance with EN374, ASTM F1001 or international equivalent.)

Eyes:

Wear safety glasses or goggles if eye contact is possible. (Eye protection must meet the standards in accordance with EN166, ANSI Z87.1 or international equivalent.)



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Skin:

Impervious protective clothing is recommended if skin contact with drug product is possible and for bulk processing operations. (Protective clothing must meet the standards in accordance with EN13982, ANSI 103 or international equivalent.)

Respiratory protection:

Under normal conditions of use, if the applicable Occupational Exposure Limit (OEL) is exceeded, wear an appropriate respirator with a protection factor sufficient to control exposures to below the OEL (e.g. particulate respirator with a half mask, P3 filter). (Respirators must meet the standards in accordance with EN140, EN143, ASTM F2704-10 or international equivalent.)

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Sildenafil Tablets, USP 25 mg

Blue, film-coated, rounded-diamond shaped tablets debossed with 'S25' on one side and plain on other side.

Sildenafil Tablets, USP 50 mg

Blue, film-coated, rounded-diamond shaped tablets debossed with 'S50' on one side and plain on other side.

Sildenafil Tablets, USP 100 mg

Blue, film-coated, rounded-diamond shaped tablets debossed with 'S100' on one side and plain on other side.



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Physical StateTabletColorBlue

Odour No data available

Molecular FormulaMixtureMolecular WeightMixture

Solvent SolubilityNo data availableWater SolubNo data availablepHNo data availableMelting/Freezing Point (°C)No data availableBoiling Point (°C)No data available

Partition Coefficient

(Method, pH, Endpoint, Value)

Sildenafil citrate Predicted 7.4 Log D 2.26

No data available Hydroxypropyl methylcellulose No data available Titanium dioxide No data available **Lactose Monohydrate** No data available **Triacetin** No data available FD & C Blue No. 2, Aluminum lake **Decomposition Temperature (°C)** No data available No data available **Evaporation Rate (Gram/s)** Vapor Pressure (kPa) No data available Vapor Density (g/ml) No data available **Relative Density** No data available No data available Viscosity

Flammability:

Autoignition Temperature (Solid) (°C)

Flammability (Solids)

Flash Point (Liquid) (°C)

Upper Explosive Limits (Liquid) (% by Vol.)

Lower Explosive Limits (Liquid) (% by Vol.)

No data available

No data available

No data available



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10. STABILITY AND REACTIVITY

Reactivity: Not Applicable

Chemical Stability: Stable under normal conditions of use.

Possibility of Hazardous Reactions

Oxidizing Properties: No data available

Conditions to Avoid: None known

Incompatible Materials: As a precautionary measure, keep away from strong oxidizers

Hazardous Decomposition Products: No data available

11. TOXICOLOGY INFORMATION

Information on Toxicological Effects General Information:

The information included in this section describes the potential hazards of the individual ingredients.

Short Term:

Active ingredient may be harmful if swallowed. May cause eye irritation (based on components).

Long Term:

Animal studies indicate that this material may cause adverse effects on the cardiovascular system.

Known Clinical Effects:

Adverse effects most commonly reported in clinical use include difficult digestion (dyspepsia), nose bleed, headache, flushing, insomnia, abnormal redness of skin (erythema), difficulty breathing, muscle pain, fever, gastrointestinal irritation, tingling/itching (paresthesia), transientchanges in light perception and color vision, effects on hearing, and effects on vision.



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Acute Toxicity: (Species, Route, End Point, Dose)

Sildenafil citrate:

Rat Oral LDmin. 300-500 mg/kg

Mouse Oral LDmin. 500-1000 mg/kg

Rat Dermal LD50 > 2000 mg/kg

Microcrystalline cellulose:

Rat Oral LD50 > 5000 mg/kg

Rabbit Dermal LD50 > 2000 mg/kg

Magnesium stearate:

Rat Oral LD50 > 2000 mg/kg

Rat Inhalation LC50 $> 2000 \text{ mg/m}^3$

Hydroxypropyl methylcellulose:

Rat Oral LD50 > 10,000 mg/kg

Titanium dioxide:

Rat Oral LD50 > 7500 mg/kg

Rat Subcutaneous LD50 50 mg/kg

Lactose Monohydrate:

Rat Oral LD 50 29700 mg/kg

Triacetin:

Rat Oral LD 50 3000 mg/kg

Mouse Oral LD 50 1100mg/kg

Acute Toxicity Comments:

A greater than symbol (>) indicates that the toxicity endpoint being tested was not achievable at the highest dose used in the test.



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Irritation / Sensitization: (Study Type, Species, Severity)

Sildenafil citrate:

Eye Irritation Rabbit Moderate

Skin Irritation Rabbit Non-irritating

Skin Sensitization Guinea Pig Negative

Microcrystalline cellulose:

Skin Irritation Rabbit Non-irritating

Eye Irritation Rabbit Non-irritating

Repeated Dose Toxicity: (Duration, Species, Route, Dose, End Point, Target Organ)

Sildenafil citrate:

6 Month(s) Rat Oral 3 mg/kg/day NOAEL Adrenal gland, Liver, Thyroid

6 Month(s) Dog Oral 15 mg/kg/day NOAEL Cardiovascular system

Reproduction & Developmental Toxicity: (Study Type, Species, Route, Dose, End Point, Effect(s))

Sildenafil citrate:

Reproductive & Fertility Rat Oral 60 mg/kg/day NOEL No effects at maximum dose

Embryo / Fetal Development Rat Oral 50 mg/kg/day NOEL Maternal Toxicity, Not Teratogenic

Embryo / Fetal Development Rabbit Oral 50 mg/kg/day NOEL Maternal Toxicity, Not Teratogenic

Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

Sildenafil citrate:

In Vitro Bacterial Mutagenicity (Ames) Salmonella Negative

In Vitro Cytogenetics Human Lymphocytes Negative

In Vivo Micronucleus Chromosome Aberration Mouse Bone Marrow Negative

Lactose Monohydrate:

In Vitro Bacterial Mutagenicity (Ames) Salmonella, E. coli Negative



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Carcinogenicity: (Duration, Species, Route, Dose, End Point, Effect(s))

Sildenafil citrate

24 Month(s) Mouse Oral 5 mg/kg/day NOAEL Not carcinogenic

24 Month(s) Rat Oral 60 mg/kg/day NOAEL Not carcinogenic

Carcinogen Status:

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Titanium dioxide:

IARC: Group 2B (Possibly Carcinogenic to Humans)

12. ECOLOGICAL INFORMATION

Environmental Overview:

In the environment, the active ingredient in this formulation is expected to remain in water or migrate through the soil to groundwater.

Toxicity:

Aquatic Toxicity: (Species, Method, End Point, Duration, Result)

Sildenafil citrate

| Daphnia magna (Water Flea) | TAD EC50 | 48 Hours | 14 mg/L |
|--|-----------|----------|------------|
| Oncorhynchus mykiss (Rainbow Trout) | OECD LC50 | 96 Hours | > 9.5 mg/L |
| Pseudokirchneriella subcapitata (Green Alga) | OECD EC50 | 72 Hours | 20 mg/L |

Aquatic Toxicity Comments:

A greater than (>) symbol indicates that acute ecotoxicity was not observed at the maximum solubility. Since the substance is insoluble in aqueous solutions above this concentration, an acute ecotoxicity value (i.e. LC/EC50) is not achievable.



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Bacterial Inhibition: (Inoculum, Method, End Point, Result)

Sildenafil citrate

Activated sludge OECD EC50 > 1000 mg/L

Persistence and Degradability: No data available

Bio-accumulative Potential:

Partition Coefficient: (Method, pH, Endpoint, Value)

Sildenafil citrate

Predicted 7.4 Log D 2.26

Mobility in Soil: No data available

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

14. TRANSPORT INFORMATION

The following refers to all modes of transportation unless specified below.

Not regulated for transport under USDOT, EUADR, IATA, or IMDG regulations.



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15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture.

Sildenafil citrate

CERCLA/SARA 313 Emission reporting Not Listed

California Proposition 65 Not Listed

EU EINECS/ELINCS List Not Listed

FD & C Blue No. 2, Aluminum lake

CERCLA/SARA 313 Emission reporting

Not Listed

California Proposition 65 Not Listed

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

EU EINECS/ELINCS List 240-589-3

Lactose Monohydrate

CERCLA/SARA 313 Emission reporting Not Listed

California Proposition 65 Not Listed

Australia (AICS): Present

EU EINECS/ELINCS List Not Listed

Triacetin

CERCLA/SARA 313 Emission reporting

Not Listed

California Proposition 65 Not Listed

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

EU EINECS/ELINCS List 203-051-9



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Hydroxypropyl methylcellulose

CERCLA/SARA 313 Emission reporting Not Listed

California Proposition 65 Not Listed

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

Standard for the Uniform Scheduling for Drugs and Poisons: Schedule 4

EU EINECS/ELINCS List Not Listed

Croscarmellose sodium

CERCLA/SARA 313 Emission reporting

Not Listed

California Proposition 65 Not Listed

Australia (AICS): Present

EU EINECS/ELINCS List Not Listed

Titanium dioxide

CERCLA/SARA 313 Emission reporting

Not Listed

California Proposition 65 carcinogen 9/2/2011 airborne, unbound particles of respirable size

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

EU EINECS/ELINCS List 236-675-5

Calcium phosphate dibasic, anhydrous

CERCLA/SARA 313 Emission reporting

Not Listed

California Proposition 65 Not Listed

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

EU EINECS/ELINCS List 231-826-1



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Microcrystalline cellulose

CERCLA/SARA 313 Emission reporting Not Listed

California Proposition 65 Not Listed

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

EU EINECS/ELINCS List 232-674-9

Magnesium stearate

CERCLA/SARA 313 Emission reporting

Not Listed

California Proposition 65 Not Listed

Inventory - United States TSCA - Sect. 8(b)

Present

Australia (AICS): Present

EU EINECS/ELINCS List 209-150-3

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. Nothing herein shall be deemed to create any warranty, express or implied. It is the responsibility of the user to determine the applicability of this information and the suitability of the material or product for any particular purpose.

Cadila Pharmaceutical Limited shall not be held liable for any damage resulting from handling or from contact with the above product.

Cadila Pharmaceutical Limited reserves the right to revise this MSDS.