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Section 1 - Identification

- (a) **Product Identifier:** Topotecan Hydrochloride for Injection
Topotecan Hydrochloride Injection
- (b) **Product Code:** 25021-206 (Topotecan HCl for Injection)
25021-236 (Topotecan HCl Injection)
- Common/Trade Name:** Topotecan HCl
- Chemical Name:** (S)-10-[(dimethylamino)methyl]-4-ethyl-4,9-dihydroxy-1*H*-pyrano[3',4':6,7] indolizino [1,2-*b*]quinoline-3,14-(4*H*,12*H*)-dione monohydrochloride
- Chemical Family:** Semi-Synthetic Quinoline
- (c) **Product Use:** Anti-tumor
- Product Type:** Regulated Prescription Drug
- Container Information:** Vials
- (d) **Distributor:** Sagent Pharmaceuticals, Inc., 1901 N. Roselle Rd, Suite 700, Schaumburg, IL 60195, 847-908-1600
- (e) **Emergency Telephone:** 866-625-1618

Section 2 - Hazards Identification


- (a) **Classification:** US OSHA: May damage the unborn child. May cause genetic defects.

NFPA Rating

Health Hazard	2
Flammability	0
Instability	0
Other	Not Available


HMIS Rating

Health Hazard	2 (Chronic Hazard)
Flammability Hazard	0
Physical Hazard	0

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(b) Signal Word, Hazard statement(s), Symbol(s), and/or Precautionary statement(s):	(c) Description of Hazards:
Signal Word:	- DANGER
<u>Hazard Statements</u>	
<ul style="list-style-type: none"> - May damage the unborn child - May cause genetic defects 	
EMERGENCY OVERVIEW:	
<p>Product Description: This product is a clear, light yellow to greenish solution, odorless solution.</p> <p>Health Hazards: WARNING! THIS PRODUCT CONTAINS A CYTOTOXIC AGENT. EXPOSURE BY ALL ROUTES OF EXPOSURE MUST BE AVOIDED In the workplace, this product may cause irritation by all routes of exposure. May be harmful if swallowed. In therapeutic use this product can cause bone marrow suppression which can lead to serious infection or death. The most common non-hematologic adverse reactions were nausea, alopecia, vomiting, sepsis or pyrexia/infection with neutropenia, diarrhea, constipation, fatigue, and fever. Can cause fetal harm. Hypersensitivity reactions have been reported from therapeutic use. Suspected of carcinogenic and mutagenic effects, based on animal and microorganism test data. These effects may be possible as a result of workplace exposure. Refer to Section 11 (Toxicological Information) for additional information on adverse effects.</p> <p>Flammability Hazards: This solution is not flammable or combustible. When involved in a fire, this material may decompose and produce irritating vapors and toxic compounds, including carbon and nitrogen oxides and hydrogen chloride.</p> <p>Reactivity Hazards: This product is not reactive.</p> <p>Environmental Hazards: Large quantities released to the aquatic and terrestrial environment may have an adverse effect. No data are available.</p> <p>Emergency Considerations: Emergency responders should wear appropriate protection for the situation to which they respond.</p>	

(d) Unknown Acute Toxicity: N/A

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Section 3 – Composition / Information on Ingredients

Topotecan Hydrochloride for Injection – Lyophilized Powder

(a) Chemical Name	(b) Common Name / Synonym	% Composition or other measure	(c) CAS No.	(d) Impurities / Stabilizing Additives
(S)-10- [(dimethylamino)methyl]-4-ethyl-4,9-dihydroxy-1 <i>H</i> -pyrano[3',4':6,7] indolizino [1,2- <i>b</i>]quinoline-3,14-(4 <i>H</i> ,12 <i>H</i>)-dione monohydrochloride	Topotecan Hydrochloride	4.34 mg/vial	119413-54-6	N/A
(2 <i>R</i> ,3 <i>R</i> ,4 <i>R</i> ,5 <i>R</i>)-Hexan-1,2,3,4,5,6-hexol	Mannitol	48 mg/vial	69-65-8	N/A
2,3-dihydroxybutanedioic acid	Tartaric Acid	20 mg/vial	526-83-0	N/A


Topotecan Hydrochloride Injection – Liquid

(a) Chemical Name	(b) Common Name / Synonym	% Composition or other measure	(c) CAS No.	(d) Impurities / Stabilizing Additives
(S)-10- [(dimethylamino)methyl]-4-ethyl-4,9-dihydroxy-1 <i>H</i> -pyrano[3',4':6,7] indolizino [1,2- <i>b</i>]quinoline-3,14-(4 <i>H</i> ,12 <i>H</i>)-dione monohydrochloride	Topotecan Hydrochloride	Proprietary	119413-54-6	N/A
(2 <i>R</i> ,3 <i>R</i> ,4 <i>R</i> ,5 <i>R</i>)-Hexan-1,2,3,4,5,6-hexol	Mannitol	Proprietary	69-65-8	N/A
2,3-dihydroxybutanedioic acid	Tartaric Acid	Proprietary	526-83-0	N/A
Water	Water	Balance	7732-18-5	N/A

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Section 4 - First Aid Measures

- Eye Exposure:** Wash immediately with clean and gently flowing water. Continue for at least 15 minutes. Obtain medical attention.
- Skin Exposure:** Using appropriate personal protective equipment, remove contaminated clothing and flush exposed area with large amounts of water. Obtain medical attention if skin reaction occurs, which may be immediate or delayed.
- Ingestion:** Never attempt to induce vomiting. Do not attempt to give any solid or liquid by mouth if the exposed subject is unconscious or semi-conscious. Wash out the mouth with water. If the exposed subject is fully conscious, give plenty of water to drink. Obtain medical attention.
- Injection:** See patient package insert in shipping carton for complete information.
- Inhalation:** Physical form suggests that risk of inhalation exposure is negligible. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Notes to Physician:** This product contains a cytotoxic agent. Manifestations of overexposure might include myelosuppression or gastrointestinal toxicity. Health surveillance with monitoring of complete blood counts is recommended in cases of overexposure.

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Section 7 - Handling and Storage

General Handling: Topotecan HCl for Injection

Keep locked up. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk. Evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

Topotecan HCl Injection

NOTE: Consistent with the OSHA Bloodborne Pathogen regulation (29 CFR 1910.1030), observe Universal Precautions while using this product. Place used or product-contaminated hypodermic needles and syringes in a rigid “Sharps” container. Dispose of materials in accordance with regulations.


PRECAUTIONS FOR SAFE HANDLING: THIS PRODUCT CONTAINS A CYTOTOXIC AGENT. ALL WORK PRACTICES MUST BE DESIGNED TO REDUCE HUMAN EXPOSURE TO THE LOWEST LEVEL.

Storage Conditions: Topotecan HCl for Injection

Protect from light and store at controlled room temperature Store at 20° to 25°C (68° to 77°F). [See USP Controlled Room Temperature.] Retain in carton until time of use. Follow instructions provided in packaging.

Topotecan HCl Injection

Containers of this material must be properly labeled. Recommended Storage Temperature: 2-8°C (36-46°F). Empty containers may contain residual material; therefore, empty containers should be handled with care and disposed of properly.

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Section 8 - Exposure Controls / Personal Protection

(a) Exposure Limits


Compound	Issuer	Type	Exposure Limit
Topotecan Hydrochloride	OSHA	PEL	NE
	ACGIH	TLV	NE
	----	STEL	NE

(b) Engineering Controls

Ventilation: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.


(c) Individual Protection Measures

Respiratory Protection:	Respirator proactive equipment is not required for normal handling of this material.
Eye Protection:	Wear appropriate safety glasses with side shields if eye contact is possible.
Skin Protection:	Wear appropriate clothing to avoid skin contact. The selection of gloves for a specific activity must be based on the material's properties and on possible permeation and degradation that may occur under the circumstances of use. Glove selection must take into account any solvents and other hazards present. Potential allergic reactions can occur with certain glove materials (e.g. Latex) and therefore these should be avoided. Care must be exercised if no data are available and further guidance should be sought from your local safety department.
Other Protective Equipment:	When isolation is not possible in production areas, applicable protective equipment must be used
Additional Exposure Precautions:	Not established

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Section 9 - Physical and Chemical Properties

(a)	Appearance	Lyophilized light yellow/greenish powder or light yellow/greenish liquid solution
(b)	Odor	No Odor
(c)	Odor Threshold	None
(d)	pH	2.5 to 3.5 (powder) 2.0 to 2.5 (liquid)
(e)	Melting Point:	213° to 218°C
(f)	Initial Boiling Point:	782.9°C (liquid)
(g)	Flash Point	427.3°C (liquid)
(h)	Evaporation Rate:	Not available
(i)	Flammability	Not established
(j)	Upper Lower Flammability or Explosion Limits	Not established
(k)	Vapor Pressure:	8.13E-26 mmHg [predict.] (liquid)
(l)	Vapor Density:	Not available
(m)	Relative Density	Not available
(n)	Solubility(ies)	Soluble in water and methanol
(o)	Partition Coefficient: n-octanol/water	1.08 water/oil distribution [predict.] (liquid)
(p)	Auto-ignition Temperature	Not established
(q)	Decomposition Temperature	>199.8°C (liquid)
(r)	Viscosity	Not available


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Section 10 - Stability and Reactivity

(a)	Reactivity	Not Reactive
(b)	Chemical Stability	Stable
(c)	Possibility of Hazardous Reactions	None established
(d)	Conditions to Avoid	Hygroscopic; keep container tightly closed.
(e)	Incompatible Materials	None for normal handling of this product..
(f)	Hazardous Decomposition Products	Avoid these products: carbon oxides (Co, CO2), nitrogen oxides (NO, NO2)

Section 11 - Toxicological Information

(a)	Likely Routes of Exposure	Ingestion, Inhalation, skin, eye
(b)	Symptoms related to the physical, chemical and toxicological characteristics	<p>Oral Toxicity: Toxicity might occur following ingestion.</p> <p>Acute Toxicity: No studies have been conducted</p> <p>Organ Effect: Adverse effects might occur in the following organ(s) following overexposure – bone marrow and formation of blood cells</p> <p>Genetic Toxicity: Known or probable human mutagen</p> <p>Other Adverse Effects: Overexposure in the work place might have the following effects – reduced white blood cell count, nausea, diarrhea, vomiting, fatigue</p>

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(c)	Delayed and immediate effects and also chronic effects from short and long term exposure	<p>Possible effects of overexposure in the workplace include: nausea; vomiting; diarrhea; bone marrow toxicity.</p> <p>Adverse effects might occur in the following organ(s) following overexposure: bone marrow and formation of blood cells.</p>
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(d) Acute Toxicity


Component	Type	Route	Species	Dosage
Mannitol	LD ₅₀	Oral	Rat	13500 mg/kg
Mannitol	LD ₅₀	Oral	Mouse	22 g/kg

(e) Hazardous Chemical Listings (Both Liquid and Powder Forms)

NTP: No IARC: No OSHA: No

Section 12 - Ecological Information

(a)	Ecotoxicity	<p>No information is available about the potential of this product to produce adverse environmental effects. This material contains an active pharmaceutical ingredient that has been tested and which may be harmful if released directly to the environment. Consult the MSDS of the active ingredient for specific information about potential environmental effects. Appropriate precautions should be taken to limit release of this mixture to the environment. Local regulations and procedures should be consulted prior to environmental release.</p> <p><u>Topotecan Hydrochloride</u> <i>Daphnia magna</i> (water flea) – EC50, 48 hrs, 61.8 mg/L</p> <p><i>Pimephales promelas</i> (fathead minnow) – EC50, 96 hrs, 45.7 mg/L</p>
(b)	Persistence and degradability	Not available

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(c)	Bioaccumulative potential	Not available
(d)	Mobility in soil	Not available
(e)	Other Adverse Effects	Not available

Section 13 - Disposal Considerations

Waste Disposal: Recommended method of disposal is incineration. Dispose of any cleanup materials and waste residue according to all applicable laws and regulations.

Section 14 - Transport Information


Lyophilized Powder

(a)	UN Number	UN3249
(b)	UN Proper Shipping Name	Medicine, Solid, Toxic N.O.S. (Topotecan HCl for Injection)
(c)	Transport Hazard Class(es)	6.1 Toxic
(d)	Packing Group	PG III
(e)	Environmental Hazards	Not available
(f)	Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	Not available
(g)	Special Precautions	Not available

Additional Transport Information for DOT, IATA and IMDG

DOT:

Proper Shipping Name	Consumer commodity, ORM-D
UN Number	Not applicable
Class/Division	ORM-D
Subsidiary Risk	None
Packing Group	Not applicable
Marine Pollutant	Not Listed

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US Emergency Response Guide Number	171
Exceptions	Quantities equal to or less than 0.25 kg per inner packaging are not subject to the full packaging and labeling requirements, although the appropriate shipping papers will be required

IATA:

Proper Shipping Name	Consumer commodity
UN Number	ID 8000
Class/Division	9 (Danger sign – black vertical stripes in upper half of white diamond with figure 9 in bottom corner)
Subsidiary Risk	None
Packing Group	Not applicable (use packing instruction 910)
Exceptions	Quantities equal to or less than 0.5 kg per inner packaging are not subject to the full packaging and labeling requirements, although the appropriate shipping papers will be required

IMDG:

Proper Shipping Name	Dangerous Goods in Limited Quantities of Class 6.1
UN Number	UN 3249
Class/Division	6.1 (danger sign – black skull and crossbones on white diamond with figure 6 in bottom corner)
Subsidiary Risk	None
Packing Group	III
EMS Number	6.1-04
Marine Pollutant	Not Listed
Exceptions	Quantities equal to or less than 3 kg per inner packaging are not subject to the full packaging and labeling requirements, although the appropriate shipping papers will be required

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Liquid Form

(a)	UN Number	Not available
(b)	UN Proper Shipping Name	Not available
(c)	Transport Hazard Class(es)	Not available
(d)	Packing Group	Not available
(e)	Environmental Hazards	Not available
(f)	Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	Not available
(g)	Special Precautions	Not available

Section 15 - Regulatory Information


Below is selected regulatory information chosen primarily for possible Sagent use. This section is not a complete analysis or reference to all applicable regulatory information. Please consider all applicable laws and regulations for your country/state.

U.S. Regulations (Liquid and Powder forms):

TSCA - No
 CERCLA - Not on this list
 RCRA – Not on this list
 SARA 302 - Not on this list
 SARA 313 – Not on this list
 OSHA Substance Specific – Hazardous
 US EPA – None

Section 16 - Other Information

As of the date of issuance, we are providing available information relevant to the handling of this material in the workplace. All information contained herein is offered with the good faith belief that it is accurate. THIS SAFETY DATA SHEET SHALL NOT BE DEEMED TO CREATE ANY WARRANTY OF ANY KIND (INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). In the event of an adverse incident associated with this material, this safety data sheet is not intended to be a substitute for consultation with appropriately trained personnel. Nor is this safety data sheet intended to be a substitute for product literature which may accompany the finished product.


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For additional information contact:

Sagent Pharmaceuticals, Inc.
1901 N. Roselle Rd, Suite 700
Schaumburg, IL 60195
847-908-1600

Glossary: This glossary contains definitions of general terms used in SDSs. Not all of these Glossary Terms will apply to this SDS.

ACGIH	American Conference of Governmental Industrial Hygienists
AICS	Australian Inventory of Chemical Substances
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute
CAS Number	Chemical Abstract Service Registry Number
CERCLA	Comprehensive Environmental Response Compensation and Liability Act (of 1980)
CHAN	Chemical Hazard Alert Notice
CHEMTREC	Chemical Transportation Emergency Center
DOT	Department of Transportation
DSL	Domestic Substances List
ECHA	European Chemicals Agency
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EPA	Environmental Protection Agency
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HEPA	High Efficiency Particulate Air (Filter)
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
ICAO/IATA	International Civil Aviation Organization/International Air Transport Association
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
KOW	Octanol/Water Partition Coefficient
LEL	Lower Explosive Limit
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NA	Not Applicable, except in Section 14 where NA = North America
NE	Not Established
NADA	New Animal Drug Application
NAIF	No Applicable Information Found
NCI	National Cancer Institute
NDSL	Non-Domestic Substances List
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
NOS	Not Otherwise Specified

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NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety Data Sheet
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value (ACGIH)
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average/8 Hours Unless Otherwise Noted
UEL	Upper Explosive Limit
UN	United Nations
USP	United States Pharmacopeia
WEEL	Workplace Environmental Exposure Level (AIHA)
WHMIS	Workplace Hazardous Materials Information System