SAFETY DATA SHEET

Product Identifier: Cisplatin Conjugated Proteins with Preservatives

Catalog ID numbers: Cat# 319XXXX & TIS-00001

SECTION 1 - IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Contact information

General
Fluidigm Corporation
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Main (U.S.): +1 (650) 266-6000
E-mail: techsupport@fluidigm.com

Emergency telephone number
+ (650) 266-6100 (outside US)
+ (866) 358-4354 (toll free)

Product identifier
Cisplatin Conjugated Proteins with Preservatives

Synonyms
None identified

Trade names
None identified

Chemical family
Mixture - contains a polypeptide.

Relevant identified uses of the substance or mixture and uses advised against
For Research Use Only.

Note
This SDS is written to address potential worker health and safety issues associated with the handling of the formulated product/mixture. Workers manufacturing this product/mixture should consult the SDS of each hazardous ingredient for hazard information and handling recommendations.

SECTION 2 - HAZARDS IDENTIFICATION

Classification of the substance or mixture
The classification and labeling listed below is for bulk formulation.

Globally Harmonized System [GHS]
Not classified

Label elements

GHS hazard pictogram
None required

GHS signal word
None required

GHS hazard statements
None required

GHS precautionary statements
None required

Other hazards
Cisplatin conjugated protein with preservatives is an antibody-based mixture. In a workplace setting, the likelihood of systemic effects following an accidental ingestion is low, due to the rapid breakdown of proteins in the digestive system. Based on the large molecular weight of proteins, systemic absorption following inhalation or dermal contact is anticipated to be low. The mixture contains bovine serum albumin, which has been associated with occupational sensitization.

Note
This mixture does not meet criteria for classification under GHS as implemented by Regulation EC No 1272/2008 (EU CLP), WHMIS 2015 (Health Canada), and Hazard Communication Standard No. 1910.1200 (US OSHA).
SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS #</th>
<th>EINECS/ ELINCS#</th>
<th>Amount</th>
<th>GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibodies</td>
<td>N/A</td>
<td>N/A</td>
<td>&lt;0.1%</td>
<td>Not classified</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>15663-27-1</td>
<td>239-733-8</td>
<td>&lt;0.01%</td>
<td>A42; H300; STOT-S1: H370; STOT-S3: H335; STOT-R1: H372; RT1A: H360FD; GCM1B: H340; Carc1B: H350; SC1: H314; EC1: H318</td>
</tr>
<tr>
<td>Bovine serum albumin</td>
<td>9048-46-8</td>
<td>N/A</td>
<td>0.1 – 0.6%</td>
<td>RSS1:H317; RS1:H334</td>
</tr>
</tbody>
</table>

Note
The primary ingredient of this mixture is sterile water (~98%). The substance listed above is not classified but is listed because it is the key component and its toxicologic properties have not yet been fully characterized. The remaining components are not hazardous and/or present at amounts below reportable limits. Amounts are listed as ranges; the exact percentage of composition is withheld as a trade secret. See Section 16 for full text of GHS classifications.

SECTION 4 - FIRST AID MEASURES

Description of first aid measures

Immediate Medical Attention Needed
No. If exposed or concerned: Get medical advice/attention.

Eye Contact
If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious quantities of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.

Skin Contact
Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.

Inhalation
Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Immediately notify medical personnel and supervisor.

Ingestion
Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.

Protection of first aid responders
See Section 8 for Exposure Controls/Personal Protection recommendations.

Most important symptoms and effects, both acute and delayed
See Sections 2 and 11.

Indication of immediate medical attention and special treatment needed, if necessary
Medical conditions aggravated by exposure: None known or reported. Treat symptomatically and supportively.
SECTION 5 - FIREFIGHTING MEASURES

Extinguishing media
Use water spray (fog), foam, dry powder, or carbon dioxide, as appropriate for surrounding fire and materials.

Specific hazards arising from the substance or mixture
No information identified. May emit carbon monoxide, carbon dioxide, oxides of nitrogen and sulfur, and other cadmium- chlorine-, phosphorus-, sulfur- and sodium-containing compounds.

Flammability/Explosivity
No explosivity data identified. As product is an aqueous solution, it is not expected to be flammable.

Advice for firefighters
Wear full protective clothing and a self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode. Decontaminate all equipment after use.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
If product is released or spilled, take proper precautions to minimize exposure by using appropriate personal protective equipment (see Section 8). Area should be adequately ventilated. Do not breathe vapors/mist/spray.

Environmental precautions
Do not empty into drains. Avoid release to the environment.

Methods and material for containment and cleaning up
DO NOT CAUSE MATERIAL TO BECOME AIRBORNE. For small spills, soak up material with absorbent, e.g., paper towels. For large spills, cordon off spill area and minimize the spreading of spilled material. Soak up material with absorbent. Collect spilled material, absorbent, and rinse water into suitable containers for proper disposal in accordance with applicable waste disposal regulations (see Section 13). Decontaminate the area twice with an appropriate solvent (see Section 9).

Reference to other sections
See Sections 8 and 13 for more information.

SECTION 7 - HANDLING AND STORAGE

Precautions for safe handling
Follow recommendations for handling pharmaceutical agents (i.e., use of engineering controls and/or other personal protective equipment if needed). Avoid contact with eyes, skin and other mucous membranes. Wash thoroughly after handling. Avoid breathing vapor/mist/spray.

Conditions for safe storage including any incompatibilities
Store at 2-8°C in tightly closed container. Avoid strong oxidizers. Store in sealed containers that are appropriately labeled.

Specific end use(s)
No information identified.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Note
Wash hands, face and other potentially exposed areas immediately in the event of physical contact.

Control Parameters/Occupational Exposure Limit Values

<table>
<thead>
<tr>
<th>Compound</th>
<th>Issuer</th>
<th>Type</th>
<th>OEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibodies</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>ACGIH</td>
<td>TLV</td>
<td>2 µg/m³</td>
</tr>
</tbody>
</table>
### SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Country</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
<td>PEL</td>
<td>2 µg/m³</td>
</tr>
<tr>
<td>Belgium, Hungary, New Zealand</td>
<td>TWA</td>
<td>2 µg/m³</td>
</tr>
<tr>
<td>Japan</td>
<td>OEL</td>
<td>1 µg/m³</td>
</tr>
<tr>
<td>Switzerland</td>
<td>MAK</td>
<td>2 µg/m³</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>TWA</td>
<td>20 µg/m³</td>
</tr>
<tr>
<td>Bovine serum albumin</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

#### Exposure/Engineering controls
None required for normal handling of packaged product. If handling bulk product:
Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. If vials are crushed or broken, or if handling bulk formulation: Utilize closed and sealed systems whenever possible. Solutions used for procedures where aerosolization may occur (e.g., pipetting, spraying, pumping, open transfers,) must be handled using a control device such as a ventilated enclosure. Control the potential for spills and leaks by securing all connections. Use clean-in-place systems.

#### Respiratory protection
None required for normal handling of packaged product. If handling bulk formulation: Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls.

#### Hand protection
None required for normal handling of packaged product. If handling bulk formulation: Wear disposable nitrile or other impervious gloves. Double gloves should be worn for direct handling of solutions. When the material is diluted in an organic solvent, wear gloves that provide protection against the solvent.

#### Skin protection
None required for normal handling of packaged product. If handling bulk formulation: Wear disposable outergarment appropriate to the task, booties, two pairs of gloves and safety glasses with side shields. Employees must be trained in proper gowning and degowning practices. An anteroom or transition area is recommended for gowning and degowning.

#### Eye/face protection
None required for normal handling of packaged product. If handling bulk formulation: Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.

#### Environmental Exposure Controls
Avoid release to the environment and operate within closed systems wherever practicable. Air and liquid emissions should be directed to appropriate pollution control devices. In case of spill, do not release to drains. Implement appropriate and effective emergency response procedures to prevent release or spread of contamination and to prevent inadvertent contact by personnel.

#### Other protective measures
Wash hands in the event of contact with product, especially before eating, drinking or smoking. Protective equipment is not to be worn outside the work area (e.g., in common areas or out-of-doors).
SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance
Aqueous solution.

Color
Clear.

Odor
No information identified.

Odor threshold
No information identified.

pH
No information identified.

Melting point/freezing point
No information identified.

Initial boiling point and boiling range
No information identified.

Flash point
No information identified.

Evaporation rate
No information identified.

Flammability (solid, gas)
No information identified.

Upper/lower flammability or explosive limits
No information identified.

Vapor pressure
No information identified.

Vapor density
Not applicable.

Relative density
No information identified.

Water solubility
Soluble.

Solvent solubility
No information identified.

Partition coefficient
No information identified.

Auto-ignition temperature
No information identified.

Decomposition temperature
No information identified.

Viscosity
No information identified.

Explosive properties
No information identified.

Oxidizing properties
No information identified.

Other information

Molecular formula
Not applicable (Mixture)

Molecular weight
Not applicable (Mixture)
SECTION 10 - STABILITY AND REACTIVITY

Reactivity No information identified.
Chemical stability No information identified.
Possibility of hazardous reactions No information identified.
Conditions to avoid No information identified.
Incompatible materials No information identified.
Hazardous decomposition products No information identified.

SECTION 11 - TOXICOLOGICAL INFORMATION

Note No data for this product/mixture were identified. The following data describe the individual ingredients where applicable.

Information on toxicological effects

Route of entry Large proteins are unlikely to be absorbed through inhalation, skin contact, or ingestion.

Acute toxicity

<table>
<thead>
<tr>
<th>Compound</th>
<th>Type</th>
<th>Route</th>
<th>Species</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibodies</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>LD50</td>
<td>Oral</td>
<td>Rat</td>
<td>14.5 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Oral</td>
<td>Mouse</td>
<td>32.7 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Intravenous (IV)</td>
<td>Rat</td>
<td>8 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LD50</td>
<td>Intravenous (IV)</td>
<td>Mouse</td>
<td>11 mg/kg</td>
</tr>
<tr>
<td></td>
<td>LC50</td>
<td>Inhalation</td>
<td>Rat</td>
<td>40250 ppm</td>
</tr>
<tr>
<td>Bovine serum albumin</td>
<td>--</td>
<td>--</td>
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<td>--</td>
</tr>
</tbody>
</table>

Irritation/Corrosion No studies identified. Cisplatin can cause eye, skin and/or respiratory tract irritation.

Sensitization No studies identified.

STOT-single exposure No studies identified. In rats, single intraperitoneal (IP) injections up to 12.2 mg/kg cisplatin caused leukopenia (characterized by decreases in neutrophils, lymphocytes, and platelets) and bone marrow depression, generalized lymphoid depletion, and intestinal/renal tubular injury, which were most severe 2-4 days post-injection. Similar target organ effects were noted in dogs following single IV doses of 2.5 mg/kg or 5 consecutives intravenous (IV) doses of 0.75 mg/kg/day. Heart effects and sperm degeneration were also seen in monkeys following acute exposure.

STOT-repeated exposure/Repeat-dose toxicity No studies identified.

Reproductive toxicity No studies identified. Similar adverse effects on spermatogenesis seen in humans were noted in monkeys administered cisplatin (additional details not provided).
SECTION 11 - TOXICOLOGICAL INFORMATION...continued

Developmental toxicity

No studies identified. In rats, IP doses of cisplatin ≥0.25 mg/kg/day before mating through gestation increased the number of resorptions and decreased the post-natal viability and exploratory behavior of surviving offspring; doses of 0.5 mg/kg/day caused embryolethality and growth retardation.

In rabbits, embryolethality was noted at IP doses >0.125 mg/kg/day, but no teratogenic effects were seen at doses up to 0.5 mg/kg/day.

In mice, IP doses of 10 mg/day administered during organogenesis led to retarded growth and bone formation but caused no major malformations. A single IP dose of ≥3 mg/kg of cisplatin on day 8 of pregnancy was fetal to ~30% of fetuses. Surviving offspring showed growth retardation and had a number of minor skeletal abnormalities.

Genotoxicity

No studies identified. Cisplatin was mutagenic in bacteria and produced chromosomal aberrations, micronuclei, and sister chromatid exchanges (SCEs) in cultured animal and human cells. It also induced SCEs in vivo in rodents but did not cause in vivo dominant lethal mutations in mice.

Carcinogenicity

Weekly IP injections of a 0.85% cisplatin solution in mice (delivering cisplatin doses equivalent to 1.62 mg/kg) for 16 weeks significantly increased lung adenomas; skin papillomas were increased when cisplatin was co-administered with croton oil as a promoter twice weekly for 52 weeks. In two rat studies, multiple IP injections (3 times 1 mg/kg/week for 3 weeks) induced leukemia. Overall, cisplatin was carcinogenic to rodents at low, occupationally relevant doses. Cisplatin is also listed as a carcinogen by OSHA, IARC (Group 2A - "Probably carcinogenic to humans"), and NTP ("Reasonably anticipated to be a human carcinogen").

Aspiration hazard

No data available.

Human health data

See "Section 2 - Other Hazards"

SECTION 12 - ECOLOGICAL INFORMATION

Toxicity

<table>
<thead>
<tr>
<th>Compound</th>
<th>Type</th>
<th>Species</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibodies</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>LC₅₀ (96 h)</td>
<td>Fish</td>
<td>34 g/L</td>
</tr>
<tr>
<td>Bovine serum albumin</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Persistence and Degradability

Polypeptides are expected to degrade rapidly when released into the environment.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Results of PBT and vPvB assessment

Not performed.

Other adverse effects

No data available.

Note

No special precautions are necessary.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste treatment methods

Dispose of wastes in accordance to prescribed federal, state, and local guidelines, e.g., appropriately permitted chemical waste incinerator. Do not send down the drain or flush down the toilet. All wastes containing the material should be properly labeled. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g., appropriately permitted municipal or on-site wastewater treatment facility.
SECTION 14 - TRANSPORT INFORMATION

Transport

Based on the available data, this product/mixture is not regulated as a hazardous material/dangerous good under EU ADR/RID, US DOT, Canada TDG, IATA, or IMDG.

UN number

None assigned.

UN proper shipping Name

None assigned.

Transport hazard classes and packing group

None assigned.

Environmental hazards

This product/mixture is not regulated as an environmental hazard or a marine pollutant.

Special precautions for users

Avoid release to the environment.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15 - REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

This SDS generally complies with the requirements listed under current guidelines in the US, EU and Canada. Consult your local or regional authorities for more information.

Chemical safety assessment

Not conducted.

TSCA status

Not listed.

SARA section 313

Not listed.

California proposition 65

Not listed.

Additional information

No other information identified.

SECTION 16 - OTHER INFORMATION

Full text of H phrases and GHS classifications

Not applicable.

Sources of data

Information from published literature and internal company data.
SECTION 16 - OTHER INFORMATION...continued

Abbreviations
ACGIH - American Conference of Governmental Industrial Hygienists; ADR/RID - European Agreement Concerning the International Carriage of Dangerous Goods by Road/Rail; AIHA - American Industrial Hygiene Association; CAS# - Chemical Abstract Services Number; CLP - Classification, Labelling, and Packaging of Substances and Mixtures; DOT - Department of Transportation; EINECS - European Inventory of New and Existing Chemical Substances; ELINCS - European List of Notified Chemical Substances; EU - European Union; GHS - Globally Harmonized System of Classification and Labeling of Chemicals; IARC - International Agency for Research on Cancer; IDLH - Immediately Dangerous to Life or Health; IATA - International Air Transport Association; IMDG - International Maritime Dangerous Goods; NIOSH - The National Institute for Occupational Safety and Health; NTP - National Toxicology Program; OEL - Occupational Exposure Limit; OSHA - Occupational Safety and Health Administration; PBT - Persistent, Bioaccumulative, and Toxic; SARA - Superfund Amendments and Reauthorization Act; STOT - Specific Target Organ Toxicity; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Issue Date
Nov 2020

Revisions
This is the first version of this SDS.

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