

SAFETY DATA SHEET

Product identifier: Cell-ID™ Cisplatin (194Pt and 198Pt)
Catalog ID number: 201194 (Cell-ID Cisplatin-194Pt), 201198 (Cell-ID Cisplatin-198Pt)

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

Contact information

General	Fluidigm Corporation 7000 Shoreline Court Suite 100, South San Francisco, CA 94080 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	Cell-ID Cisplatin (194Pt and 198Pt)
Synonyms	None identified
Trade names	None identified
Chemical family	Mixture is a suspension of cisplatin, a cytotoxic agent, in dimethyl sulfoxide (DMSO).
Relevant identified uses of the substance or mixture and uses advised against	<i>For Research Use Only. Not for use in diagnostic procedures.</i>
Note	This SDS is written to address potential health and safety issues associated with the handling of the formulated product.

SECTION 2 - HAZARDS IDENTIFICATION

Classification of the substance or mixture

Globally Harmonized System [GHS]	Flammable liquid - Category 4. Irritant (skin) - Category 2.
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Label elements

GHS hazard pictogram



GHS signal word

Warning

GHS hazard statements

H227 - Combustible liquid. H315 - Causes skin irritation.

GHS precautionary statements

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P264 - Wash hands thoroughly after handling. P280 - Wear protective gloves/eye protection/face protection. P302 + P352 - IF ON SKIN: Wash with plenty of soap and water. P321 - Specific treatment (see First Aid information on product label and/or Section 4 of the SDS). P332 + P313 - If skin irritation occurs: Get medical advice/ attention. P362 + P364 - Take off contaminate clothing and wash it before reuse. P370 + P378 - In case of fire: Use water spray (fog), foam, dry powder or carbon dioxide for extinction. P403 - Store in a well-ventilated place. P501 - Dispose of contents/container to location in accordance with local/regional/ national/international regulations.

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Other hazards Mixture contains an isotope of cisplatin (194Pt or 198Pt). Cisplatin is used as a cytotoxic anticancer agent.

The most common adverse effects reported in clinical use of cisplatin include severe nausea and vomiting, peripheral neuropathies (pain or numbness in the extremities), kidney toxicity, myelosuppression (characterized by decreases in white blood cells and platelets), hearing loss, and ocular toxicity. Cumulative renal insufficiency is the major dose-limiting toxicity of cisplatin. Allergic reactions, including facial swelling, wheezing, fast heart rate, and hypotension have also been reported and may occur within minutes of drug administration. Other reported adverse effects have included hair loss, malaise, cardiac abnormalities, rash, and asthenia (weakness). Cisplatin and other platinum-containing salts are considered to be irritating and corrosive to skin after direct contact, capable of inducing a burning sensation in the eyes, lacrimation, and conjunctival hyperemia (increased blood flow into the eyeball), and irritating to the respiratory tract following inhalation. Cisplatin exposure has been associated with decreased spermatogenesis and abnormal Leydig cell function in men. Sperm production was found to return to normal in 50–60% of men between 1 and 3 years following treatment cessation. Based on its mechanism of action and the embryotoxicity noted in animals, cisplatin may adversely affect a developing fetus.

Note This mixture is classified as hazardous 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

<u>Ingredient</u>	<u>CAS #</u>	<u>EINECS/ ELINCS#</u>	<u>Amount</u>	<u>GHS Classification</u>
Cisplatin	15663-27-1	239-733-8	0.03%	ATO2: H300; STOT-S1: H370; STOT-S3: H335; STOT-R1: H372; RT1A: H360FD; GCM1B: H340; Carc1B: H350; SC1: H314;
Dimethyl sulfoxide	67-68-5	200-664-3	>99.9%	SI2: H315; FL4:H227

Note No data were identified for 194Pt and 198Pt. The hazards for cisplatin are considered similar and are reported throughout the safety data sheet as appropriate. The ingredients listed above are considered hazardous. See Section 16 for full text of GHS classifications.

SECTION 4 - FIRST AID MEASURES

Description of first aid measures

Immediate Medical Attention Needed	Yes
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.

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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 Contains the cytotoxic agent, cisplatin. Medical conditions aggravated by exposure: Myelosuppression. Renal impairment. Hypersensitivity to cisplatin or platinum- containing compounds. Treat symptomatically and supportively. If accidental exposure occurs to an individual who is also taking one or more concomitant medications, consult the respective package or prescribing information for potential drug interactions.

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, sulfur, and platinum-containing compounds.

Flammability/Explosivity Combustible liquid and vapor. Keep away from heat and flame. Vapors are heavier than air and may flow along surfaces to remote ignition sources and flashback.

Advice for firefighters In case of a fire, keep containers cool with water and remove from fire area. Wear full protective clothing and an approved, positive pressure, self-contained breathing apparatus. Wash all equipment thoroughly after use. Dike area if possible to contain water for later disposal.

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 mist/vapors/spray.

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

Methods and material for containment and cleaning up Remove sources of ignition. Dike area to contain spill. Maintain ventilation until all vapors have been eliminated. Take precautions as necessary to prevent contamination of ground and surface waters. Absorb and/or contain spill with inert materials (e.g., sand, vermiculite or other appropriate material), then place in appropriate container. For large spills, use water spray to disperse vapors; flush spill area. Do not flush to sewer. Prevent run-off from entering drains, sewers, or waterways.

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

SECTION 7 - HANDLING AND STORAGE

Precautions for safe handling If vials are crushed or broken, drug substance may be released into the air. Minimize generation and accumulation of airborne material. Follow recommendations for handling bulk formulated/packaged cytotoxic pharmaceutical agents (i.e., use of engineering controls and/or other personal protective equipment if needed). Wash thoroughly after handling. Avoid breathing vapor or mist. Do not permit eating/drinking/smoking near this material. All materials used for transferring or preparing this product must be considered contaminated and disposed of properly.

Conditions for safe storage including any incompatibilities Store at -20 °C away from strong oxidizing agents. Keep away from heat and sources of ignition. Store locked up. Store in sealed containers that are appropriately labeled.

Specific end use(s) No information identified.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

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Note Dispose of broken vials/syringes in a sharps container.

Control

Parameters/Occupational

Exposure Limit Values

<u>Compound</u>	<u>Issuer</u>	<u>Type</u>	<u>OEL</u>
Cisplatin	ACGIH	TLV	2 µg/m ³
	OSHA	PEL	2 µg/m ³
	Belgium, Hungary, New Zealand	TWA	2 µg/m ³
	Japan	OEL	1 µg/m ³
Dimethyl sulfoxide	Switzerland	MAK	2 µg/m ³
	United Kingdom	TWA	20 µg/m ³
	AIHA	WEEL-TWA	250 ppm
	Austria, Germany, Switzerland	MAK	50 ppm, 160 mg/m ³
	Estonia, Lithuania, Sweden	STEL	150 ppm, 500 mg/m ³
	Estonia, Lithuania	TWA	50 ppm, 150 mg/m ³
	Sweden	TLV	50 ppm, 150 mg/m ³
	Finland	TWA	50 ppm
	Switzerland	STEL	100 ppm, 320 mg/m ³
	Germany	Ceiling	100 ppm, 320 mg/m ³
	Denmark	TWA	50 ppm, 160 mg/m ³
Slovenia	TWA	160 mg/m ³	
Denmark	TWA	50 ppm, 160 mg/m ³	

Exposure/engineering controls

If handling bulk product or vials are opened/crushed/broken: Control exposures to below the OEL (for the active ingredients if available). Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. Use local exhaust and/or enclosure at aerosol/mist-generating points. Use engineered local exhaust ventilation (LEV) and/or enclosure for procedures where aerosolization may occur such as opened transfers, pumping, and spraying. Solutions can be handled outside a containment system or without LEV during procedures with no potential for aerosolization. All containers for solutions and slurries must be covered while being transferred.

Respiratory protection

If handling bulk product or vials are opened/crushed/broken: Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls. At a minimum, a tight-fitting full-face respirator with HEPA filters is required when performing aerosol-generating operations. A powered air-purifying respirator (PAPR) with HEPA filters and head cover is required for spill cleanup.

Hand protection

Wear nitrile or other impervious gloves if skin contact is possible. Double gloves should be considered. When the material is diluted in an organic solvent, wear gloves that provide protection against the solvent.

Skin protection

Wear disposable coveralls appropriate to the task, booties, and safety glasses with side shields. Ensure gloves are protective against solvents in use. Protective garments (coveralls, disposable coveralls, lab coats) are not to be worn in common areas (e.g., cafeterias) or out-of-doors. Employees must be trained in proper gowning and degowning practices.

Eye/face protection

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.

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Other protective measures

Wash hands in the event of contact with this product/mixture, 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	Clear liquid
Color	Colorless
Odor	Odorless
Odor threshold	No information identified
pH	No information identified
Melting point/freezing point	16.1–18.9 °C (61–66 °F)
Initial boiling point and boiling range	189 °C (372 °F)
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	0.41 mmHg @ 20 °C (68 °F)
Vapor density	1.1 g/cm ³
Relative density	No information identified
Water solubility	Miscible in water
Solvent solubility	No information identified
Partition coefficient (<i>n</i>-octanol/water)	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 weight	Not applicable (mixture)
Molecular formula	Not applicable (mixture)

SECTION 10 - STABILITY AND REACTIVITY

Reactivity	No information identified
Chemical stability	Stable under normal temperatures and pressures

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Possibility of hazardous reactions No information identified

Conditions to avoid Avoid direct sunlight and conditions that might generate heat. Avoid flames, sparks, and other sources of ignition such as shock or friction. Avoid dispersion as a dust cloud.

Incompatible materials Strong oxidizing agents

Hazardous decomposition products No information identified

SECTION 11 - TOXICOLOGICAL INFORMATION

Note No data were identified for 194Pt and 198Pt. The hazards for cisplatin are considered similar and are reported as appropriate. The following data describe the cisplatin and/or the individual ingredients where applicable.

Information on toxicological effects

Route of entry May be absorbed by inhalation, skin contact, and ingestion

Acute toxicity

Compound	Type	Route	Species	Dose
Cisplatin	LD50	Oral	Rat	14.5 mg/kg
	LD50	Oral	Mouse	32.7 mg/kg
	LD50	Intravenous (IV)	Rat	8 mg/kg
	LD50	Intravenous (IV)	Mouse	11 mg/kg
Dimethyl sulfoxide	LC50	Inhalation	Rat	40,250 ppm
	LD50	Oral	Rat	14.5 g/kg
	LD50	Oral	Rat	28.3 g/kg
	LD50	Oral	Mouse	7.9 g/kg
	LD50	Oral	Mouse	21.4 g/kg

Irritation/Corrosion Cisplatin can cause eye, skin, and/or respiratory tract irritation. Dimethyl sulfoxide is a skin irritant in humans and animals.

Sensitization No studies identified

STOT-single exposure 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 consecutive intravenous (IV) doses of 0.75 mg/kg/day. Heart effects and sperm degeneration were also seen in monkeys following acute exposure.

Three groups of male rats were exposed to an aerosol of 1,600 mg/m³ DMSO for four hours. Groups were sacrificed immediately after exposure, 24 hours after exposure, or two weeks after exposure. There was no mortality and none of the animals displayed outward signs of toxicity during and after exposure to DMSO. Organs appeared normal at necropsy.

Single IV injections of undiluted DMSO were administered to groups of male and female rats. Dose levels were 2.5, 5.0, and 10 g/kg. Each dose was administered over a 1-minute interval. Animals were observed for 14 days following DMSO administration. With one exception, deaths occurred within the first 24 hours. Nonlethal doses of DMSO produced decreased motor activity and myasthenia.

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STOT-repeated exposure/Repeat-dose toxicity

Male rats were exposed to 200 mg/m³ DMSO for seven hours/day, five days a week, over six weeks for 30 exposures. There were no outward toxic signs noted in any of the exposed animals throughout the experimental period of six weeks and no effects on blood parameters were reported.

DMSO was administered dermally to normal and abraded rabbit skin for 26 weeks at a dose of 1 or 5 g/kg/day. At 23 weeks, treatment was withheld from some animals due to ocular changes; the remaining animals continued to receive DMSO applications for the scheduled 26 weeks. Mortality was high in all groups. However, there was no significant differences in mortality between groups. There were no clinical signs to suggest systemic toxicity.

DMSO was administered as a 90% solution to rhesus monkeys by gastric intubation seven days a week for up to 87 weeks. Doses administered were equivalent to 990, 2,970, and 8,910 mg/kg/day. The principal physical signs seen in the animals given DMSO orally included excess salivation and emesis. These signs occurred sporadically and did not appear to be related to the dose except in the group receiving higher volume of compound. Anorexia occurred at high oral doses but was not evident at the two lower dose levels. No DMSO-related changes were found in the treated monkeys during physical examinations.

Reproductive toxicity

Adverse effects similar to those on spermatogenesis seen in humans were noted in monkeys administered cisplatin (additional details not provided).

DMSO has been extensively used as a cryoprotectant in the freezing of early experimental animal and human embryos. The viability and apparent normalcy of frozen embryos after thawing suggests that DMSO exposure is not toxic to the early embryo.

Developmental toxicity

In rats, IP doses of cisplatin ≥ 0.25 mg/kg/day before mating through gestation increased the number of resorptions and decreased the postnatal viability and exploratory behavior of surviving offspring. Doses of 0.5 mg/kg/day caused embryoletality and growth retardation. In rabbits, embryoletality 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 $\sim 30\%$ of fetuses. Surviving offspring showed growth retardation and had a number of minor skeletal abnormalities.

DMSO has been associated with teratogenic and/or embryotoxic effects in the hamster, rat, mouse, and chick at high doses. In the hamster, the injection of 500 to 800 mg/kg on day 8 of gestation was associated with a wide variety of congenital defects, including exencephaly, microphthalmia, bone and limb abnormalities, and cleft lip. Increased frequencies of fetal death were observed when pregnant rats or rabbits were treated with doses of 5–10 or 1–3 g/kg/day, respectively. However, fetal death was not increased in another study after intraperitoneal treatment of pregnant rats with 6.9 g/kg/day of dimethyl sulfoxide. No malformations were observed in the offspring of rats treated with dimethyl sulfoxide at doses of 0.2–5 g/kg/day during pregnancy.

Genotoxicity

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. DMSO was negative for genotoxicity in an Ames bacterial cell mutagenicity assay and a sister chromatid exchange assay in Chinese hamster ovary cells.

Dimethyl sulfoxide was negative for genotoxicity in an Ames bacterial cell mutagenicity assay and a sister chromatid exchange assay in Chinese hamster ovary cells.

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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"). None of the other components of the mixture present at levels greater than or equal to 0.1% are listed by NTP, IARC, ACGIH, or OSHA as a carcinogen.
Aspiration hazard	No data available
Human health data	See Section 2 - "Other hazards"

SECTION 12 - ECOLOGICAL INFORMATION

Toxicity

<u>Compound</u>	<u>Type</u>	<u>Species</u>	<u>Concentration</u>
Cisplatin	LC50 (96 h)	Fish	34 g/L
Dimethyl sulfoxide	EC50/96 h	Skeletonema costatum (diatom)	12.35–25.5 g/L
	LC50/96 h	Pimephales promelas	34 g/L
	LC50/96 h	Oncorhynchus mykiss	33–37 g/L (static)
	LC50/96 h	Lepomis macrochirus	>40 g/L (static)
	LC50/96 h	Cyprinus carpio	41.7 g/L
	EC50/24 h	Daphnia magna	7 g/L

Persistence and Degradability Cisplatin is not readily biodegradable.

Bioaccumulative potential No data identified

Mobility in soil No data identified

Results of PBT and vPvB assessment Not performed

Other adverse effects No data identified

Note The environmental characteristics of the formulated product have not been fully investigated. Releases to the environment should be avoided.

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 onsite wastewater treatment facility.

SECTION 14 - TRANSPORT INFORMATION

Transport	De minimis exemption. Hazardous ingredients are in excepted quantity. The concentration of hazardous material in this product's composition is below that which is regulated for transport.
UN number	None assigned
UN proper shipping name	None assigned
Transport hazard classes and packing group	None assigned

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Environmental hazards	Based on the available data, this 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
Hazardchem Code/HIN	None assigned

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.
Chemical safety assessment	Not conducted
TSCA status	Not listed
SARA section 313	Not listed
California proposition 65	Cisplatin is listed as carcinogenic.
Component Analysis – State	Cisplatin is listed as hazardous in CA, MA, ME, MN, NJ, PA, and RI.
Component Analysis – Chemical Inventory	Cisplatin is listed in the chemical inventory of the following countries: Australia, China, Canada, and EU.
Additional information	No other information identified

SECTION 16 - OTHER INFORMATION

NFPA Ratings	Cisplatin	Health: 3	Fire: 0	Reactivity: 0
	DMSO	Health: 0	Fire: 2	Reactivity: 0
Full text of H phrases and GHS classifications	FL4 - Flammable Liquid Category 4. ATO2 - Acute Toxicity (Oral) Category 2. SC1 - Skin corrosion Category 1. EC1 - Eye corrosion Category 1. STOT-S1 - Specific Target Organ Toxicity Following Single Exposure Category 1. STOT-S3 - Specific Target Organ Toxicity Following Single Exposure Category 3. STOT-R1 - Specific Target Organ Toxicity Following Repeat Exposure Category 1. RT1A - Reproductive toxicity Category 1A. GCM1B - Germ Cell Mutagenicity Category 1B. Carc1B - Carcinogenicity Category 1B. H227 - Combustible liquid. H300 - Fatal if swallowed. H314 - Causes severe skin burns and eye damage. H335 - May cause respiratory irritation. H340 - May cause genetic defects. H350 - May cause cancer. H360FD - May damage fertility. May damage the unborn child. H370 - Causes damage to immune, hematological, gastrointestinal, and central nervous systems. H372 - Causes damage to immune, hematological, gastrointestinal, and central nervous systems through prolonged or repeated exposure.			
Sources of data	Information from published literature and internal company data.			

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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; DNEL - Derived No Effect Level; 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; HIN - Hazard Identification Number; IARC - International Agency for Research on Cancer; IDLH - Immediately Dangerous to Life or Health; IATA - International Air Transport Association; IBC - International Building Code; IMDG - International Maritime Dangerous Goods; LOEL - Lowest Observed Effect Level; LOAEL - Lowest Observed Adverse Effect Level; MAK - Maximum Workplace Concentration (translated from German); MARPOL - Marine Pollution; NIOSH - The National Institute for Occupational Safety and Health; NOEL - No Observed Effect Level; NOAEL - No Observed Adverse Effect Level; NTP - National Toxicology Program; OEL - Occupational Exposure Limit; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PNEC - Predicted No Effect Concentration; PBT/vPvB - Persistent, Bioaccumulative and Toxic/very Persistent and very Bioaccumulative; SARA - Superfund Amendments and Reauthorization Act; STOT - Specific Target Organ Toxicity; STEL - Short Term Exposure Limit; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; WEEL - Workplace Environmental Exposure Levels; WHMIS - Workplace Hazardous Materials Information System

Issue Date

31 January 2018

Revisions

This is the third version of this SDS.

Disclaimer

The information and recommendations in this safety data sheet are, to the best of Supplier's knowledge, accurate as of the date of issue. However, Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. Read the Safety Data Sheet before handling product. For Research Use Only. Not for use in diagnostic procedures.