MATERIAL SAFETY DATA SHEET

Version No: MSDS/Doxo-AUS/DP-004 **Effective Date:** 21st October 2019

DOXORUBICIN HYDROCHLORIDE CONCENTRATED INJECTION 10 MG/5 ML AND 200MG/ 100 ML

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Product Name: Doxorubicin Hydrochloride Concentrated Injection 10 mg/5 mL and 200mg/ 100 mL

Sponsor	Manufacturer-1	Manufacturer-2
Accord Healthcare Pty Ltd Level 24, 570 Bourke Street, Melbourne, VIC, 3000, Australia	Intas Pharmaceuticals Ltd. Plot No. 457, 458 Village-Matoda, Bavla Road, Ta. Sanand, Dist. Ahmedabad-382 210, Gujarat, India	Intas Pharmaceuticals Ltd. Plot No. 5, 6 and 7, Pharmez, Near Matoda Village, Ahmedabad-382 213, Gujarat, India

SECTION 2 – COMPOSITION, INFORMATION ON INGREDIENTS

Active: Doxorubicin Hydrochloride.

Inactive: Sodium Chloride, Hydrochloric acid 37 %,Water for Injection.

Ingredient	CAS Number	EU EINECS/ELINCS List	GHS Classification	%
Doxorubicin Hydrochloride	25316-40-9	246-818-3	Muta.1B (H340) Carc.1B (H350) Repr.1B (H360FD)	0.2
Hydrochloric Acid	7647-01-0	231-595-7	Press. Gas Skin Corr.1A (H314) Acute Tox.3 (H331)	**
Water for injection	7732-18-5	231-791-2	Not Listed	*
Sodium chloride	7647-14-5	231-598-3	Not Listed	*

Additional Information: * Proprietary ** to adjust pH
Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety.
In accordance with 29 CFR 1910.1200, the exact percentage composition of this mixture has been withheld as a trade secret.

For the full text of the CLP/GHS abbreviations mentioned in this Section, see Section 16

SECTION 3 - HAZARDS IDENTIFICATION

Classification of the Substance or Mixture:

GHS – Classification:

Germ Cell Mutagenicity	:	Category 1B
Reproductive Toxicity	:	Category 1B
Carcinogenicity	:	Category 1B

Label Elements

Signal Word: Danger

Hazard Statements:

H340	-	May cause genetic defects
H350	-	May cause cancer
H360FD	-	May damage fertility. May damage the unborn child.

Precautionary Statements:

P201	-	Obtain special instructions before use
P202	-	Do not handle until all safety precautions have been read and understood
P281	-	Use personal protective equipment as required
P308 + P313	-	IF exposed or concerned: Get medical attention/advice
P405	-	Store locked up
P501	-	Dispose of contents/container in accordance with all local and national regulations

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

SECTION 4 - EMERGENCY & 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 3 – 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

SECTION 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 self-contained breathing apparatus.

SECTION 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 spill with absorbent material. Clean spill area thoroughly.

Additional Consideration for Large Spills: Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Cleanup operations should only be undertaken by trained personnel.

SECTION 7 - HANDLING AND STORAGE

Precautions for Safe Handling: Restrict access to work area. Avoid breathing vapor or mist. Avoid contact with eyes, skin and clothing. When handling, use appropriate personal protective equipment (see Section 8). It is recommended that all operations be fully enclosed and no air recirculated. 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.

Conditions for Safe Storage, Including any Incompatibilities:

Storage Conditions: Store as directed by product packaging.

Storage Temperature: 2-8°C (36-46°F)

Specific end use(s): Pharmaceutical drug product

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

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

Doxorubicin Hydrochloride
OEL TWA-8 Hr : 0.5 μg/m^3

Sodium chloride
Latvia OEL - TWA : 5 mg/m^3
Lithuania OEL - TWA : 5 mg/m^3

Hydrochloric Acid

ACGIH Ceiling Threshold Limit	:	2 ppm
Australia PEAK	:	5 ppm 7.5 mg/m^3
Austria OEL – MAKs	:	5 ppm 8 mg/m^3
Belgium OEL - TWA	:	5 ppm 8 mg/m^3
Bulgaria OEL - TWA	:	5 ppm 8.0 mg/m^3
Cyprus OEL - TWA	:	5 ppm 8 mg/m^3
Czech Republic OEL - TWA	:	8 mg/m^3
Estonia OEL - TWA	:	5 ppm 8 mg/m^3
Germany - TRGS 900 - TWAs	:	2 ppm 3 mg/m^3
Germany (DFG) - MAK	:	2 ppm 3.0 mg/m^3
Greece OEL - TWA	:	5 ppm 7 mg/m^3
Hungary OEL - TWA	:	8 mg/m^3
Ireland OEL - TWAs	:	5 ppm 8 mg/m^3
Italy OEL - TWA	:	5 ppm 8 mg/m^3
Japan - OELs - Ceilings	:	2 ppm 3.0 mg/m^3
Latvia OEL – TWA	:	5 ppm 8 mg/m^3
Lithuania OEL - TWA	:	5 ppm 8 mg/m^3
Luxembourg OEL - TWA	:	5 ppm 8 mg/m^3
Malta OEL - TWA	:	5 ppm 8 mg/m^3
Netherlands OEL - TWA	:	8 mg/m^3
Poland OEL - TWA	:	5 mg/m^3
Portugal OEL - TWA	:	5 ppm 8 mg/m^3
Romania OEL - TWA	:	5 ppm 8 mg/m^3
Slovakia OEL - TWA	:	5 ppm 8.0 mg/m^3
Slovenia OEL - TWA	:	5 ppm 8 mg/m^3
Spain OEL – TWA	:	5 ppm 7.6 mg/m^3

Switzerland OEL –TWAs	:	2 ppm 3.0 mg/m^3
Vietnam OEL - TWAs	:	5 mg/m^3
Sodium chloride **Occupational Exposure Band (OEB)**	:	OEB 1 (control exposure to the range of 1000ug/m^3 to 3000ug/m^3)

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 disposable gloves (e.g. Nitrile, etc.) (double 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.)

Skin: Impervious disposable 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 full mask, P3 filter). (Respirators must meet the standards in accordance with EN136, EN143, ASTM F2704-10 or international equivalent.)

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State	:	Solution.
Color	:	Red.
Odor	:	No data available.

Odor Threshold	:	No data available.
Molecular Formula	:	Mixture.
Molecular Weight	:	Mixture.
Solvent Solubility	:	No data available.
Water Solubility	:	No data available.
pH	:	3.0
Melting/Freezing Point (°C)	:	No data available.
Boiling Point (°C)	:	No data available.

Partition Coefficient

Doxorubicin Hydrochloride	:	No data available.
Water for injection	:	No data available.
Sodium chloride	:	No data available.
Hydrochloric Acid	:	No data available.
Decomposition Temperature (°C)	:	No data available.
Evaporation Rate (Gram/s)	:	No data available.
Vapor Pressure (kPa)	:	No data available.
Vapor Pressure (kPa)	:	No data available.
Vapor Density (g/ml)	:	No data available.
Relative Density	:	No data available.
Viscosity	:	No data available.

Flammablity

Autoignition Temperature (Solid) (°C)	:	No data available.
Flammability (Solids)	:	No data available.
Flash Point (Liquid) (°C)	:	No data available.
Upper Explosive Limits (Liquid) (% by Vol.)	:	No data available.
Lower Explosive Limits (Liquid) (% by Vol.)	:	No data available.

SECTION 10 - STABILITY AND REACTIVITY

Reactivity: No data available

Chemical Stability: Stable under normal conditions of use.

Possibility of Hazardous Reactions:

Oxidizing Properties: No data available

Conditions to Avoid: Fine particles (such as dust and mists) may fuel fires/explosions.

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

Hazardous Decomposition Products: No data available

SECTION 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: May cause eye and skin irritation (based on components).

Long Term: Repeat-dose studies in animals have shown a potential to cause adverse effects on testes, the developing fetus.

Known Clinical Effects: Bone marrow suppression is the most serious adverse effect seen during clinical use. Drugs of this class have been associated with rare, but potentially serious cardiac events. These events have not been observed from occupational exposures, however, those with preexisting cardiovascular illnesses may be at increased risk from exposure.

Acute Toxicity:
Doxorubicin Hydrochloride:

Species	Route	End Point	Dose
Mouse	Oral	LD 50	698 mg/kg
Mouse	Para-periosteal	LD 50	1.2 mg/kg
Rat	Intravenous	LD 50	12.5 mg/kg
Rat	Intraperitoneal	LD 50	16 mg/kg

Sodium chloride:

Species	Route	End Point	Dose
Rat	Oral	LD50	3000 mg/kg
Mouse	Oral	LD50	4000 mg/kg

Irritation / Sensitization:
Sodium chloride:

Study Type	Species	Severity
Eye Irritation	Rabbit	Moderate
Skin Irritation	Rabbit	Mild

Hydrochloric Acid:

Study Type	Species	Severity
Skin	Irritation	Severe
Eye	Irritation	Severe

Reproduction & Developmental Toxicity:
Doxorubicin Hydrochloride:

Study Type	Species	Route	Dose	End Point	Effect(s)
Reproductive &	Rat	Intraperitoneal	0.05 mg/kg/day	LOAEL	Fertility

Fertility-Females					
Reproductive & Fertility-Males	Rat	Intraperitoneal	0.1 mg/kg/day	LOAEL	Fertility
Embryo / Fetal Development	Rat	Intraperitoneal	0.8 mg/kg/day	LOAEL	Teratogenic, Embryotoxicity
Embryo / Fetal Development	Rabbit	Intraperitoneal	0.4 mg/kg/day	LOAEL	Embryotoxicity

Genetic Toxicity:
Doxorubicin Hydrochloride:

Study Type	Cell Type/Organism	Result
Bacterial Mutagenicity (Ames)	*Salmonella* , *E. coli*	Positive
In Vivo Micronucleus	Mouse	Positive
In Vitro Chromosome Aberration	Chinese Hamster Ovary (CHO) cells	Positive
In Vitro Sister Chromatid Exchange	Human Lymphocytes	Positive
Dominant Lethal Assay	Mouse	Positive

Carcinogen Status: See below

Doxorubicin Hydrochloride

IARC: 2A
NTP: Reasonably Anticipated To Be A Human Carcinogen

Hydrochloric Acid
IARC: Group 3 (Not Classifiable)

SECTION 12 - ENVIRONMENTAL IMPACT INFORMATION

Environmental Overview: Environmental properties have not been thoroughly investigated. Releases to the environment should be avoided.

Toxicity: No data available.

Persistence and Degradability: No data available.

Bio-accumulative Potential: No data available.

Mobility in Soil: No data available.

SECTION 13 - DISPOSAL INFORMATION

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.

SECTION 14 - TRANSPORTATION INFORMATION

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

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

SECTION 15 - REGULATORY INFORMATION

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

Doxorubicin Hydrochloride:

CERCLA/SARA 313 Emission reporting	**:**	Not Listed
California Proposition 65	**:**	carcinogen 7/1/1987 developmental toxicity 1/29/1999 male reproductive toxicity 1/29/99
EU EINECS/ELINCS List	**:**	246-818-3

Water for injection:

CERCLA/SARA 313 Emission reporting	**:**	Not Listed
California Proposition 65	**:**	Not Listed
Inventory - United States TSCA - Sect. 8(b)	**:**	Present
Australia (AICS):	**:**	Present
REACH - Annex IV - Exemptions from the obligations of Register:	**:**	Present
EU EINECS/ELINCS List	**:**	231-791-2

Sodium chloride:

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	**:**	231-598-3

Hydrochloric Acid:		
CERCLA/SARA 313 Emission reporting	**:**	1.0 %
CERCLA/SARA Hazardous Substances and their Reportable Quantities:	**:**	5000 lb 2270 kg
CERCLA/SARA - Section 302 Extremely Hazardous TPQs	**:**	500 lb
CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs	**:**	5000 lb
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 5 Schedule 6
EU EINECS/ELINCS List	**:**	231-595-7

SECTION 16 - OTHER DATA

Text of CLP/GHS Classification abbreviations mentioned in Section 3
Germ cell mutagenicity-Cat.1B; H340 - May cause genetic defects
Carcinogenicity-Cat.1B; H350 - May cause cancer
Reproductive toxicity-Cat.1B; H360FD - May damage fertility. May damage the unborn child.
Skin corrosion/irritation-Cat.1A; H314 - Causes severe skin burns and eye damage
Acute toxicity, inhalation-Cat.3; H331 - Toxic if inhaled

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall INTAS be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if INTAS has been advised of the possibility of such damages.