MATERIAL SAFETY DATA SHEET

Dexmedetomidine (as hydrochloride), Concentrated Injection, 100 µg/mL, 2 mL

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Product Name: Dexmedetomidine (as hydrochloride), Concentrated Injection, 100 µg/mL, 2 mL

Sponsor	Manufacturing site
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

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Intended Use: Pharmaceutical product used as Sedative/analgesic; alpha-2-adrenergic agonist agent

SECTION 2 – HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS - Classification Not classified as hazardous

Label Elements

Signal Word: Not Classified

Hazard Statements: Not classified in accordance with international standards for workplace safety.

Other Hazards No data available

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 3 – COMPOSITION, INFORMATION ON INGREDIENTS

Hazardous

Ingredient	CAS Number	EU EINECS/ ELINCS List	GHS Classification	%
Dexmedetomidine hydrochloride	145108-58-3	Not Listed	Muta.2 (H341) Repr.2 (H361d) STOT RE2 (H373)	< 0.1
Sodium Chloride	7647-14-5	231-598-3	Not Listed	*
Water for Injection	7732-18-5	231-791-2	Not Listed	*

Additional Information: * Proprietary 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 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

SECTION 5 – FIRE FIGHTING MEASURES

Extinguishing Media: Extinguish fires with CO_2, 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 mists) may fuel fires/explosions.

Advice for Fire-Fighters

During all fire fighting 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. Clean up 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). 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.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions: Store as directed by product packaging.

Incompatible Materials: Dexmedetomidine reported to produce violent reactions with BrF_3, H_2SO_4, $KMnO_4$

Specific end use(s): Pharmaceutical product used as Sedative/analgesic; alpha-2-adrenergic agonist agent

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

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

SODIUM CHLORIDE

Latvia OEL - TWA	5 mg/m^3
Lithuania OEL - TWA	5 mg/m^3

The purpose of the Occupational Exposure Band (OEB) classification system is to separate substances into different Hazard categories when the available data are sufficient to do so, but inadequate to establish an Occupational Exposure Limit (OEL). The OEB given is based upon an analysis of all currently available data; as such, this value may be subject to revision when new information becomes available.

Dexmedetomidine hydrochloride

Occupational Exposure Band (OEB): OEB 5 (control exposure to < 1 $\mu g/m^3$)

Exposure Controls

Engineering Controls: Engineering controls should be used as the primary means to control exposures.

Personal Protective Equipment: Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).

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	:	Liquid
Color	:	Clear, colorless
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	:	No data available.
Melting/Freezing Point (°C)	:	No data available
Boiling Point (°C)	:	No data available.

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

Sodium Chloride	:	No data available
Water for Injection	:	No data available
Dexmedetomidine hydrochloride	:	No data available
Decomposition Temperature(°C)	:	No data available
Evaporation Rate (Gram/s)	:	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

Flammability:

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:	:	Dexmedetomidine reported to produce violent reactions with BrF3, H2SO4, KMnO4
Hazardous Decomposition Products	:	No data available

SECTION 11 – TOXICOLOGY INFORMATION

Information on Toxicological Effects

General Information: Toxicological properties have not been thoroughly investigated. The information in this section describes the potential hazards of the individual ingredients and the formulation.

Known Clinical Effects: Based on clinical trials in humans, possible adverse effects following intravenous exposure to this compound may include: decrease in blood pressure (hypotension), increase in blood pressure (hypertension), nausea, decreased heart rate (bradycardia), fever, vomiting, increased heart rate (tachycardia), and decreased red blood cell count (anemia).

Acute Toxicity:

SODIUM CHLORIDE			
Species	**Route**	**End Point**	**Dose**
Rat	Sub-tenon injection (eye)	LC50/1hr	> 42 g/m^3
Rat	Oral	LD50	3 g/kg
Mouse	Oral	LD 50	4 g/kg
Rabbit	Dermal	LD 50	> 10 g/kg

Irritation / Sensitization:

SODIUM CHLORIDE		
Study Type	**Species**	**Severity**
Skin Irritation	Rabbit	Mild
Eye Irritation	Rabbit	Mild

Repeated Dose Toxicity:

Dexmedetomidine hydrochloride					
Duration	**Species**	**Route**	**Target Organ**	**Dose**	**End Point**
28 Day(s)	Rat	Intravenous	Eyes, Adrenal gland, Lungs		
28 Day(s)	Rat	Intramuscular	Adrenal gland, Eyes, Lungs		
28 Day(s)	Dog	Intravenous	Liver, Central Nervous System		
28 Day(s)	Dog	Intramuscular	Liver, Central Nervous System	10 µg/kg/day	NOAEL

Reproduction & Development Toxicity:

Dexmedetomidine hydrochloride					
Duration	**Species**	**Route**	**Dose**	**End Point**	**Effect(s)**
Embryo / Fetal Development	Rat	Subcutaneous	20 µg/kg	NOAEL	Not teratogenic, Fetotoxicity
Peri-/Postnatal Development	Rat	Subcutaneous	2 µg/kg/day	NOAEL	Fetotoxicity, Developmental toxicity
Embryo / Fetal Development	Rabbit	Intravenous	96 µg/kg/day	NOAEL	Not Teratogenic
Reproductive & Fertility	Rat	Subcutaneous	54 µg/kg/day	NOAEL	Fertility

Genetic Toxicity:

Dexmedetomidine hydrochloride		
Study Type	**Cell Type/Organism**	**Result**
In Vitro Bacterial Mutagenicity (Ames)	*Salmonella , E. coli*	Negative
In Vitro Mammalian Cell Mutagenicity	Mouse Lymphoma	Negative
In Vitro Chromosome Aberration	Human Lymphocytes	Positive with activation, Negative without activation
In Vivo Micronucleus	Mouse	Positive

Carcinogen Status: Not listed as a carcinogen by IARC, NTP or US OSHA.

SECTION 12 – ENVIRONMENTAL IMPACT INFORMATION

Environmental Overview : Environmental properties have not been investigated.
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 – TRANSPORATION 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

Dexmedetomidine hydrochloride

CERCLA/SARA 313 Emission reporting Not Listed
California Proposition 65 Not Listed
EU EINECS/ELINCS List Not Listed

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

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

SECTION 16 – OTHER DATA

Text of CLP/GHS Classification abbreviations mentioned in Section 3

Germ cell mutagenicity-Cat.2; H341 - Suspected of causing genetic defects

Specific target organ toxicity, repeated exposure-Cat.2; H373 - May cause damage to organs through prolonged or repeated exposure

Reproductive toxicity-Cat.2; H361d - Suspected of damaging the unborn child

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