SAFETY DATA SHEET

SECTION 1 : IDENTIFICATION

Product Name:	**Milrinone Lactate Injection**
Manufacturer Name:	Fresenius Kabi USA, LLC
Address:	Three Corporate Drive Lake Zurich, Illinois 60047
General Phone Number:	(847) 550-2300
Customer Service Phone Number:	(888) 386-1300
Health Issues Information:	(800) 551-7176
SDS Creation Date:	January 08, 2009
SDS Revision Date:	March 04, 2025

SECTION 2 : HAZARD(S) IDENTIFICATION

GHS Pictograms:

Signal Word: DANGER.

GHS Class:
Respiratory sensitisation. category 1.
Skin Sensitization. category 1.
Reproductive toxicity. Effects on or via lactation.

Hazard Statements:
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May cause harm to breast-fed children.

Precautionary Statements:
Obtain special instructions before use.
Do not breathe dust/fume/gas/mist/vapours/spray.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid contact during pregnancy and while nursing.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
IF ON SKIN: Wash with plenty of water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF exposed or concerned: Get medical advice/attention.
Specific treatment (see ... on this label).
If skin irritation or rash occurs: Get medical advice/attention.
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container in accordance with Local, State, Federal and Provincial regulations.

Emergency Overview: This product is intended for therapeutic use only when prescribed by a physician. Potential adverse reactions from prescribed doses and overdoses are described in the package insert.

Route of Exposure: Inhalation Ingestion Eye contact Skin Absorption. Injection.

Potential Health Effects:

Eye: Contact with eyes may cause irritation.

Signs/Symptoms: Adverse reactions from therapeutic doses include: Ventricular arrhythmias, supraventricular arrhythmias, hypotension, angina chest pain, and headaches. Occupational exposure has not been fully investigated.

Aggravation of Pre-Existing Conditions: Individuals who are hypersensitive to any component of this product.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Ingredient Percent	EC Num.
Milrinone Lactate	78415-72-2	1 mg/mL	
Lactic acid	50-21-5	0.95 mg/mL to 1.29 mg/mL	
Dextrose, Anhydrous	50-99-7	47 mg/mL	
Water for Injection	7732-18-5	Quantity Sufficient	

SECTION 4 : FIRST AID MEASURES

Eye Contact:	Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention.
Skin Contact:	Immediately wash skin with plenty of soap and water for 15 to 20 minutes, while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists.
Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
Ingestion:	If conscious, flush mouth out with water immediately. Call a physician or poison control center immediately. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.
Other First Aid:	For Adverse Event Information, please call (800) 551-7176.

SECTION 5 : FIRE FIGHTING MEASURES

Flash Point:	Not established.
Flash Point Method:	Not established.
Auto Ignition Temperature:	Not established.
Lower Flammable/Explosive Limit:	Not established.
Upper Flammable/Explosive Limit:	Not established.
Fire Fighting Instructions:	Evacuate area of unprotected personnel. Use cold water spray to cool fire exposed containers to minimize risk of rupture. Do not enter confined fire space without full protective gear. If possible, contain fire run-off water.
Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this material. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Protective Equipment:	As in any fire, wear Self-Contained Breathing Apparatus (SCBA), MSHA/NIOSH (approved or equivalent) and full protective gear.
Hazardous Combustion Byproducts:	Thermal decomposition products may include smoke and toxic fumes. Oxides of carbon, oxides of nitrogen and other organic substances may be formed. Other undetermined low molecular weight hydrocarbon compounds may be released in small quantities depending upon specific conditions of combustion.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Avoid personal contact and breathing vapors or mists. Use proper personal protective equipment as listed in Section 8.
Environmental Precautions:	Avoid runoff into storm sewers, ditches, and waterways.
Methods for containment:	Contain spills with an inert absorbent material such as soil, sand or oil dry.
Methods for cleanup:	Absorb spill with inert material (e,g., dry sand or earth), then place in a chemical waste container. After removal, flush spill area with soap and water to remove trace residue.

SECTION 7 : HANDLING and STORAGE

Handling:	When handling pharmaceutical products, avoid all contact and inhalation of vapor, mists and/or fumes. Use with adequate ventilation. Use only in accordance with directions.
Storage:	Store at controlled room temperature 15 to 30°C (59 to 86°F). Do not freeze.
Work Practices:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Hygiene Practices:	Wash thoroughly after handling. Avoid contact with eyes and skin. Avoid inhaling vapor or mist.

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering Controls:	General ventilation is sufficient if this product is being used in a controlled medical setting (clinic, hospital, medical office) for its sole intended parenteral (injection) purpose. Otherwise, use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls including use of a biosafety cabinet / fume hood to control airborne levels below recommended exposure limits.
Eye/Face Protection:	Chemical splash goggles. Wear a face shield also when splash hazard exist.
Skin Protection Description:	Protective laboratory coat, apron, or disposable garment recommended.
Hand Protection Description:	Wear appropriate protective gloves. Consult glove manufacturer's data for permeability data. Nitrile rubber or natural rubber gloves are recommended.

Respiratory Protection:	No personal respiratory protective equipment is normally required when this product is being used/administered by a licensed healthcare practitioner (i.e. an end-user such as a clinician / doctor / nurse) for its sole intended parenteral (injection) purpose in a controlled medical setting. The need for respiratory protection will vary according to the airborne concentrations and environmental conditions. A NIOSH approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances. Consult the NIOSH web site (http://www.cdc.gov/niosh/npptl/topics/respirators/) for a list of respirator types and approved suppliers.
Other Protective:	Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.

EXPOSURE GUIDELINES

SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

Physical State:	Liquid solution.
Color:	Clear to pale yellow
Boiling Point:	Not established.
Melting Point:	Not established.
Solubility:	Slightly soluble in methanol. Very slightly soluble in chloroform and water.
Vapor Density:	Not established.
Vapor Pressure:	Not established.
Percent Volatile:	Not established.
pH:	3.2 - 4.0
Molecular Formula:	Mixture
Molecular Weight:	211.2
Flash Point:	Not established.
Flash Point Method:	Not established.
Auto Ignition Temperature:	Not established.

SECTION 10 : STABILITY and REACTIVITY

Chemical Stability:	Stable under normal temperatures and pressures.
Hazardous Polymerization:	Not reported.
Incompatible Materials:	Avoid acids and bases. Avoid contact with oxidizing agents.

SECTION 11 : TOXICOLOGICAL INFORMATION

Milrinone Lactate :

Acute Toxicity:	LD50 SC Rat: 58 mg/kg LD50 SC Mouse: 62 mg/kg LD50 IV Rat: 73 mg/kg LD50 IV Mouse: 79 mg/kg

Milrinone Lactate :

RTECS Number:	DW1762000
Ingestion:	Oral - Rat LD50: 91 mg/kg [Details of toxic effects not reported other than lethal dose value] Oral - Mouse LD50: 137 mg/kg [Details of toxic effects not reported other than lethal dose value]
Other Toxicological Information:	Intravenous. - Rat LD50: 73 mg/kg [Details of toxic effects not reported other than lethal dose value] Intravenous. - Mouse LD50: 79 mg/kg [Details of toxic effects not reported other than lethal dose value] Intravenous. - Rabbit LD50: 44400 ug/kg [Behavioral - ataxia Cardiac - cardiomyopathy including infarction Lungs, Thorax, or Respiration - dyspnea] Intravenous. - Rat TDLo: 1200 mg/kg/30D (intermittent) [Cardiac - cardiomyopathy including infarction Kidney/Ureter/Bladder - changes in bladder weight Related to Chronic Data - death] Subcutaneous - Rat LD50: 58 mg/kg [Details of toxic effects not reported other than lethal dose value] Subcutaneous - Mouse LD50: 62 mg/kg [Details of toxic effects not reported other than lethal dose value] Subcutaneous - Rat TDLo: 910 mg/kg/13W (intermittent) [Cardiac - other changes] Intraperitoneal. - Rat TDLo: 10 mg/kg [Behavioral - alteration of operant conditioning]

Lactic acid :

RTECS Number:	OD2800000
Eye:	Eye - Rabbit Standard Draize test.: 750 ug [severe]
Skin:	Administration onto the skin - Rabbit LD50: >2 gm/kg [Details of toxic effects not reported other than lethal dose value] Administration onto the skin - Rabbit Standard Draize test.: 5 mg/24H [severe] Administration onto the skin - Rabbit Standard Draize test.: 100 mg/24H [Moderate] Administration onto the skin - Rat TDLo: 57590 mg/kg/13W [(Intermittent) Brain and Coverings - Changes in brain weight Kidney/Ureter/Bladder - Changes in bladder weight Blood - Other changes]

Ingestion:	Oral - Rat LD50: 3543 mg/kg [Details of toxic effects not reported other than lethal dose value] Oral - Mouse LD50: 4875 mg/kg [Details of toxic effects not reported other than lethal dose value]

Dextrose, Anhydrous :

RTECS Number:	LZ6600000
Ingestion:	Oral - Rat LD50: 25800 mg/kg [Behavioral - Coma Lungs, Thorax, or Respiration - Cyanosis Gastrointestinal - Hypermotility, diarrhea]
Other Toxicological Information:	Intravenous. - Mouse LD50: 9 gm/kg [Details of toxic effects not reported other than lethal dose value] Intravenous. - Rabbit LDLo: 12 gm/kg [Details of toxic effects not reported other than lethal dose value] Subcutaneous - Rat TDLo: 15400 gm/kg/22W (continuous) [Tumorigenic - equivocal tumorigenic agent by RTECS criteria Tumorigenic - tumors at site of application] Intraperitoneal. - Mouse LD50: 18 gm/kg [Details of toxic effects not reported other than lethal dose value] Intraperitoneal. - Mouse TDLo: 100 mg/kg [Behavioral - alteration of classical conditioning] Intraperitoneal. - Mouse TDLo: 365 gm/kg [Endocrine - other changes Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol)] Intraperitoneal. - Rat TDLo: 2000 mg/kg [Endocrine - other changes Reproductive - Paternal Effects - prostate, seminal vesicle, Cowper's gland, accessory glands Related to Chronic Data - changes in prostate weight] Intraperitoneal. - Rat TDLo: 300 gm/kg [Reproductive - Maternal Effects - ovaries, fallopian tubes Reproductive - Maternal Effects - uterus, cervix, vagina]

SECTION 12 : ECOLOGICAL INFORMATION

Ecotoxicity:	No ecotoxicity data was found for the product.
Environmental Stability:	No environmental information found for this product.

SECTION 13 : DISPOSAL CONSIDERATIONS

Waste Disposal:	Dispose of in accordance with Local, State, Federal and Provincial regulations.

SECTION 14 : TRANSPORT INFORMATION

DOT Shipping Name:	Not Regulated.
DOT UN Number:	Not Regulated.

SECTION 15 : REGULATORY INFORMATION

EINECS Number:	278-903-6

Lactic acid :

TSCA Inventory Status:	Listed
EINECS Number:	200-018-0
Canada DSL:	Listed
Canada IDL:	Identified under the Canadian Hazardous Products Act Ingredient Disclosure List: 0.1%.921(100)

Dextrose, Anhydrous :

TSCA Inventory Status:	Listed
EINECS Number:	200-075-1
Canada DSL:	Listed

SECTION 16 : ADDITIONAL INFORMATION

HMIS Ratings:

HMIS Health Hazard:	1*
HMIS Fire Hazard:	0
HMIS Reactivity:	0
HMIS Personal Protection:	C

SDS Creation Date:	January 08, 2009
SDS Revision Date:	March 04, 2025
SDS Revision Notes:	Overall SDS review - no changes to formulation. Added HMIS ratings for Health, Flammability, Reactivity, and Personal Protective Equipment (PPE) in Section 16.
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