Xylazine hydrochloride

Novachem Pty Ltd

Chemwatch Hazard Alert Code: **3**

Version No: **1.1**
Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Issue Date: **10/12/2023**
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S.GHS.AUS.EN

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	Xylazine hydrochloride
Synonyms	Not Available
Proper shipping name	TOXIC SOLID, ORGANIC, N.O.S. (contains xylazine hydrochloride)
Chemical formula	C12-H16-N2-S .Cl-H
Other means of identification	DRE-C17943500
CAS number	23076-35-9*

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Reference material for laboratory use only

Details of the manufacturer or supplier of the safety data sheet

Registered company name	**Novachem Pty Ltd**	**Novachem Pty Ltd**
Address	25 Crissane Road, Heidelberg West Victoria 3081 Australia	25 Crissane Road, Heidelberg West Victoria 3081 Australia
Telephone	+61384151255	+61384151255
Fax	+61386250088	+61386250088
Website	www.novachem.com.au	www.novachem.com.au
Email	novachem@novachem.com.au	novachem@novachem.com.au

Emergency telephone number

Association / Organisation	**Victorian Poisons Information Centre**	**Victorian Poisons Information Centre**
Emergency telephone numbers	13 11 26	13 11 26
Other emergency telephone numbers	Not Available	Not Available

SECTION 2 Hazards identification

Classification of the substance or mixture

Poisons Schedule	Not Applicable
Classification [1]	Acute Toxicity (Oral) Category 3, Skin Corrosion/Irritation Category 2, Serious Eye Damage/Eye Irritation Category 2A, Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, Hazardous to the Aquatic Environment Long-Term Hazard Category 3
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)	
Signal word	**Danger**

Hazard statement(s)

H301	Toxic if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.

Page 1 continued...

H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s) Prevention

P264	Wash all exposed external body areas thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P261	Avoid breathing dust/fumes.

Precautionary statement(s) Response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician/first aider.
P330	Rinse mouth.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.

Precautionary statement(s) Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.

SECTION 3 Composition / information on ingredients

Substances

CAS No	%[weight]	Name
23076-35-9	100	xylazine hydrochloride

Legend: *1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L; * EU IOELVs available*

Mixtures

See section above for composition of Substances

SECTION 4 First aid measures

Description of first aid measures

Eye Contact

If this product comes in contact with the eyes:
- Immediately hold eyelids apart and flush the eye continuously with running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
- Transport to hospital or doctor without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin Contact

If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

Inhalation

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

Ingestion

- **IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.**
- For advice, contact a Poisons Information Centre or a doctor.
- Urgent hospital treatment is likely to be needed.
- In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
- If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the SDS should be provided. Further action will be the responsibility of the medical specialist.
- If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the SDS.

Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
- **INDUCE** vomiting with fingers down the back of the throat, **ONLY IF CONSCIOUS**. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

NOTE: Wear a protective glove when inducing vomiting by mechanical means.

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Indication of any immediate medical attention and special treatment needed

Healthcare workers and nurse practitioners who encounter patients with alpha-agonist toxicity in the emergency department should follow the Trauma ABCDE protocol for patient management. If the condition is not treated, it can be associated with severe morbidity and mortality. Consultation with a medical toxicologist is advised. Even though there is no specific antidote, proper management leads to good outcomes.
Asymptomatic patients who are at risk for alpha-agonist toxicity can be given activated charcoal and monitored by the nursing staff, with any changes in the patient's condition reported to the clinician (MD, DO, PA, or NP).
If the patient requires admission, the nursing staff will need to assist with supportive care including airway management and cardiac monitoring.
The emergency pharmacist should assist in medication reconciliation and evaluate for drug-drug interaction. If a low dose of a vasopressor is needed, the pharmacist should assist in appropriate dosing of norepinephrine.
Alpha-adrenergic toxicity is associated with a compilation of symptoms, including central nervous system depression, bradycardia, and hypotension. Alpha-adrenergic toxicity is often very responsive to supportive care, including intravenous fluid administration, airway monitoring, and repletion of catecholamines as necessary via the use of vasopressor agents.
There is no antidote approved for human use, and naloxone has no proven efficacy
· Alpha agonist toxicity can be associated with severe morbidity and mortality, but with proper management, patients usually do very well. Consultation with a medical toxicologist is advised.
· Central alpha-2 agonist toxicity is associated with CNS depression, bradycardia, hypotension, and miosis.
· The pediatric population is at particular risk due to the prevalence of central alpha-2 agonist prescriptions for children and teens with attention deficit hyperactivity disorder (ADHD).
· Patients are very easily treated with intravenous fluids and if needed, vasopressors. Norepinephrine is the vasopressor of choice.
Toxicity is encountered in various populations, particularly in children and adolescents, due to the growing use of these agents. .
The diagnosis of alpha agonist toxicity is clinical. Central alpha agonists are not detectable in standard urine drug screen, and specific drug concentrations are not routinely available. Concentrations can be obtained through specialized laboratories but are usually not indicated and involve a send-out process which can take days to weeks for results.
· As with all toxic patients, particularly when an overdose is of concern, evaluation should include a detailed history and physical exam.
· Airway, breathing, circulation and glycemic status should immediately be evaluated.
· History should include attention to medication and prescription access, possible discussion with family members and friends, a local, physician, drug-monitoring program inquiry, and review of prior presentations.
· A physical exam should include close attention to vital signs, including temperature, heart rate, and respiration rate and depth (i.e., minute ventilation and tidal volume) to identify bradypnea and hypopnea. A thorough neurological exam should also be done.
· All toxicology patients should also have an electrocardiogram, basic metabolic panel, and an acetaminophen concentration. Other considerations are salicylate concentration, transaminases, and pregnancy status. Neuroimaging should be considered if other possible traumatic or medical etiologies are contributing to the presentation. A chest x-ray should be considered if aspiration is of concern.
· Asymptomatic patients who are at risk for alpha-agonist toxicity can be given activated charcoal and monitored. Activated charcoal may be useful in decreasing absorption and can be considered early in the presentation, provided patient is protecting his or her airway and is not somnolent.
· If asymptomatic after 4 hours, patients can be toxicologically cleared as these agents, except for methyldopa, have a fast onset of action.
· Symptomatic patients should usually be admitted to the intensive care unit. Symptoms can be prolonged beyond several days.
· Supportive care is the mainstay of treatment for alpha-2 agonist toxicity, including airway management and cardiac monitoring.
· Intubation may be necessary. here is no proven benefit to gastric emptying, and enhanced elimination with dialysis is not useful.
· There is no specific antidote approved for human use. Although naloxone has been reported to reverse symptoms, it is not a proven antidote, nor is it considered the standard of care. It is not routinely recommended but can be trialed if attempting to distinguish from possible opioid toxicity.
· Early hypertension often resolves before the presentation, but if observed, should not be treated as it is transient. Treatment of early hypertension may cause worsening of the eventual hypotension.
· Alpha-2 agonist toxicity is often very responsive to treatment, and initial treatment should include tactile stimulation and intravenous fluid administration.
· Persistent bradycardia and hypotension are responsive to vasopressor administration, which serves to replace the deficiency of catecholamines. Usually, only low dose vasopressor administration is required for reversal of symptoms, and initial vasopressor of choice is norepinephrine.
· Fatalities are exceedingly rare, and patients can be considered toxicologically cleared when they are clinically well with the return of baseline vital signs and mental status
Alpha-2 agonist toxicity results from decreased catecholamine output, which leads to sympathetic depression. Associated symptoms most commonly include central nervous system depression, bradycardia, and hypotension. Miosis and hyporeflexia are often evident. In more severe cases, symptomatology may also include coma, hypothermia, respiratory depression or apnea. Patients may present with normal vital signs and mental status early on, but symptoms generally ensue within the first hour, with evidence of somnolence, bradycardia and hypotension – sometimes preceded by transient hypertension. Deterioration of clinical course can occur with further decrease in mental status, progressing from somnolence to coma, worsened bradycardia and hypotension, and occasionally hypothermia and respiratory depression in severe cases. This latter compilation of symptoms may occur as the initial presentation when time of ingestion to reaching medical care is delayed.
Differential Diagnosis
Considering the clinical picture of alpha-2 agonist toxicity, the differential diagnosis includes other drugs and medical conditions that cause CNS depression, bradycardia, and hypotension. Drug toxicities that should be considered in the differential diagnosis should include beta adrenergic antagonists, calcium channel antagonists, cardiac glycosides, and possibly GABA-B agonists such as baclofen. Alpha-2 agonist toxicity can also include miosis, or “pinpoint pupils,” and respiratory depression, which can strongly resemble an opioid overdose. Toxicity secondary to alpha-2 agonists should be considered in patients that present with apparent opioid toxicity who do not respond to naloxone administration. Medical conditions in the differential diagnosis should include neurogenic shock and acute myocardial infarctions involving the sinoatrial node or the atrioventricular node.
Prognosis
Full recovery usually occurs within 24 hours with adequate supportive care
Complications
Perfusion must be maintained. If adequate perfusion is not maintained, the patient may be at risk for end-organ damage, including myocardial ischemia and anoxic brain injury.
Alpha Receptor Agonist Toxicity: Kenneth Norman; Thomas M. Nappe. Treasure Island (FL): StatPearls Publishing; 2021
http://www.ncbi.nlm.nih.gov/books/NBK500023/ Jan-.
For clonidine intoxication:
· If overdose occurs the stomach should be emptied by aspiration and lavage.
· Severe hypotension may respond to placing the patient in the supine position with the feet raised. The effects of gross overdosage may respond to the infusion of plasma.
· Absorbed from the gastrointestinal tract with peak plasma concentrations between 1.5 and 3 hours and a reported half-life of about 12 hours. About 50% of the dose is excreted in the urine unchanged.
[Martindale]
Treatment may include the following:
· Do NOT induce vomiting.
· Gastric lavage may be useful following recent and/or large.ingestion.
· Administration of activated charcoal and/or a cathartic may be beneficial.
· For bradycardia -
· Use atropine sulfate.
· For hypertension - Administer intravenous furosemide,diazoxide, phentolamine, or nitroprusside.
· For hypotension - Consider intravenous fluids or vasopressor agents; administer a dopamine infusion. Naloxone may be useful for management of respiratory depression, hypotension, or coma; monitor blood pressure for paradoxical hypertension. If necessary, use a tolazoline infusion; however, this is not recommended due to inconsistent outcomes.
· Dialysis is not likely to significantly enhance elimination. [USP DI 2004 and PDR 20
In overdose, hypertension may develop early and may be followed by hypotension, bradycardia, respiratory depression, hypothermia, drowsiness, decreased or absent reflexes, weakness, irritability and miosis. The frequency of CNS depression may be higher in children than adults. Large overdoses may result in reversible cardiac conduction defects or dysrhythmias, apnea, coma and seizures. Signs and symptoms of overdose generally occur within 30 minutes to two hours after exposure. As little as 0.1 mg of clonidine has produced signs of toxicity in children.
There is no specific antidote for clonidine overdosage. Clonidine overdosage may result in the rapid development of CNS depression; therefore, induction of vomiting with ipecac syrup is not recommended. Gastric lavage may be indicated following recent and/or large ingestions. Administration of activated charcoal and/or a cathartic may be beneficial. Supportive care may include atropine sulfate for bradycardia, intravenous fluids and/or vasopressor agents for hypotension and vasodilators for hypertension. Naloxone may be a useful adjunct for the management of clonidine-induced respiratory depression, hypotension and/or coma; blood pressure should be monitored since the administration of naloxone has occasionally resulted in paradoxical hypertension. Dialysis is not likely to significantly enhance the elimination of clonidine.
The largest overdose reported to date involved a 28-year old male who ingested 100 mg of clonidine hydrochloride powder. This patient developed hypertension followed by hypotension, bradycardia, apnea, hallucinations, semicoma, and premature ventricular contractions. The patient fully recovered after intensive treatment. Plasma clonidine levels were

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60 ng/ml after 1 hour, 190 ng/ml after 1.5 hours, 370 ng/ml after 2 hours, and 120 ng/ml after 5.5 and 6.5 hours. In mice and rats, the oral LD50 of clonidine is 206 and 465 mg/kg, respectively
Treat symptomatically.
Treatment of overdose of oral sympathomimetics should be symptomatic and supportive and may include the following:
1. Consider gastric lavage within one hour of ingestion. Induced vomiting may not be advisable because of the potential for seizures and worsening hypertension.
2. Administer activated charcoal slurry.
3. Monitor EKG, ECG, serum electrolytes, blood sugar, blood pressure, urinary output, and renal function. Pharmacological action is required only in severely symptomatic patients.
4. For pulmonary edema (noncardiogenic) - Maintain ventilation and oxygenation with close arterial blood gas monitoring.
5. For seizures or severe agitation - Administer benzodiazepines.
6. For dystonic reactions - Administer benzotropine or diphenhydramine.
7. For ventricular tachycardia - Administer lidocaine.
8. For severe hypertension - Nitroprusside, labetalol, or phentolamine may be necessary.
9. For hypotension - Infuse patient with isotonic solution; if condition persists, administer dopamine or norepinephrine.
10. For rhabdomyolosis - Administer sufficient 0.9% saline to maintain urine output of 2 to 3 l/kg/hour. Diuretics may be necessary; urinary alkalinization is NOT routinely recommended.
11. For hyperthermia - Manage with external cooling; avoid phenothiazines. [Meditext 2006]

SECTION 5 Firefighting measures

Extinguishing media

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

Special hazards arising from the substrate or mixture

Fire Incompatibility	‣ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Advice for firefighters

Fire Fighting	‣ Alert Fire Brigade and tell them location and nature of hazard. ‣ Wear breathing apparatus plus protective gloves in the event of a fire. ‣ Prevent, by any means available, spillage from entering drains or water courses. ‣ Use fire fighting procedures suitable for surrounding area.
Fire/Explosion Hazard	‣ Combustible solid which burns but propagates flame with difficulty; it is estimated that most organic dusts are combustible (circa 70%) - according to the circumstances under which the combustion process occurs, such materials may cause fires and / or dust explosions. ‣ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions). ‣ Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited - particles exceeding this limit will generally not form flammable dust clouds; once initiated, however, larger particles up to 1400 microns diameter will contribute to the propagation of an explosion. Combustion products include: carbon monoxide (CO) carbon dioxide (CO2) hydrogen chloride phosgene nitrogen oxides (NOx) sulfur oxides (SOx) other pyrolysis products typical of burning organic material. May emit poisonous fumes.
HAZCHEM	2X

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	‣ Clean up waste regularly and abnormal spills immediately. ‣ Avoid breathing dust and contact with skin and eyes. ‣ Wear protective clothing, gloves, safety glasses and dust respirator. ‣ Use dry clean up procedures and avoid generating dust.
Major Spills	

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	‣ Avoid all personal contact, including inhalation. ‣ Wear protective clothing when risk of exposure occurs.

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	▸ Use in a well-ventilated area. ▸ Prevent concentration in hollows and sumps. ▸ Organic powders when finely divided over a range of concentrations regardless of particulate size or shape and suspended in air or some other oxidizing medium may form explosive dust-air mixtures and result in a fire or dust explosion (including secondary explosions) ▸ Minimise airborne dust and eliminate all ignition sources. Keep away from heat, hot surfaces, sparks, and flame. ▸ Establish good housekeeping practices. ▸ Remove dust accumulations on a regular basis by vacuuming or gentle sweeping to avoid creating dust clouds.
Other information	▸ Store in original containers. ▸ Keep containers securely sealed. ▸ Store in a cool, dry, well-ventilated area. ▸ Store away from incompatible materials and foodstuff containers.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Glass container is suitable for laboratory quantities ▸ Lined metal can, lined metal pail/ can. ▸ Plastic pail. ▸ Polyliner drum. ▸ Packing as recommended by manufacturer. For low viscosity materials ▸ Drums and jerricans must be of the non-removable head type. ▸ Where a can is to be used as an inner package, the can must have a screwed enclosure. For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.): ▸ Removable head packaging; ▸ Cans with friction closures and ▸ low pressure tubes and cartridges may be used.
Storage incompatibility	▸ Avoid reaction with oxidising agents

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
Xylazine hydrochloride	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
xylazine hydrochloride	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
xylazine hydrochloride	E	≤ 0.01 mg/m³
Notes:	*Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.*	

Exposure controls

Appropriate engineering controls	**Unless written procedures, specific to the workplace are available, the following is intended as a guide:** ▸ **For Laboratory-scale handling of Substances assessed to be toxic by inhalation. *Quantities of up to 25 grams*** may be handled in Class II biological safety cabinets *; ***Quantities of 25 grams to 1 kilogram*** may be handled in Class II biological safety cabinets* or equivalent containment systems; ***Quantities exceeding 1 kg*** may be handled either using specific containment, a hood or Class II biological safety cabinet*, ▸ HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapours. ▸ The need for respiratory protection should also be assessed where incidental or accidental exposure is anticipated. Dependent on levels of contamination, PAPR, full face air purifying devices with P2 or P3 filters or air supplied respirators should be evaluated. **For potent pharmacological agents:** **Powders** To prevent contamination and overexposure, no open handling of powder should be allowed. ▸ Powder handling operations are to be done in a powders weighing hood, a glove box, or other equivalent ventilated containment system. ▸ In situations where these ventilated containment hoods have not been installed, a non-ventilated enclosed containment hood should be used. ▸ Pending changes resulting from additional air monitoring data, up to 300 mg can be handled outside of an enclosure provided that no grinding, crushing or other dust-generating process occurs.
Individual protection measures, such as personal protective equipment	

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Eye and face protection	▸ Chemical protective goggles with full seal. [AS/NZS 1337.1, EN166 or national equivalent] ▸ Shielded mask (gas-type). ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.
Skin protection	See Hand protection below
Hands/feet protection	The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hygiene is a key element of effective hand care. ▸ Rubber gloves (nitrile or low-protein, powder-free latex, latex/ nitrile). Employees allergic to latex gloves should use nitrile gloves in preference. ▸ Double gloving should be considered. ▸ PVC gloves.
Body protection	See Other protection below
Other protection	▸ For quantities up to 500 grams a laboratory coat may be suitable. ▸ For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs. ▸ For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.

Respiratory protection

Type -P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	- -	PAPR-P1 -
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

* - Negative pressure demand ** - Continuous flow
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

· Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
· The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
· Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
· Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
· Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)
· Use approved positive flow mask if significant quantities of dust becomes airborne.
· Try to avoid creating dust conditions.
Class P2 particulate filters are used for protection against mechanically and thermally generated particulates or both.
P2 is a respiratory filter rating under various international standards, Filters at least 94% of airborne particles
Suitable for:
· Relatively small particles generated by mechanical processes eg. grinding, cutting, sanding, drilling, sawing.
· Sub-micron thermally generated particles e.g. welding fumes, fertilizer and bushfire smoke.
· Biologically active airborne particles under specified infection control applications e.g. viruses, bacteria, COVID-19, SARS

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	The minimum requirement for adrenergic agents is a primary or secondary amine separated from a substituted benzene ring by one or two carbons. This configuration results in strong agonist activity. As the size of the substituent attached to the amine becomes greater, particularly with respect to a tert-butyl group, then the molecule typically is found to have receptor affinity without intrinsic activity, and is therefore an antagonist. White Solid

Physical state	Solid	**Relative density (Water = 1)**	Not Available
Odour	No Odour	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	Not Available	**Decomposition temperature (°C)**	Not Available
Melting point / freezing point (°C)	168	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	Not Available	**Molecular weight (g/mol)**	Not Available

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Flash point (°C)	Not Available	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Available	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Available	**Surface Tension (dyn/cm or mN/m)**	Not Applicable
Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water	Not Available	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures.
Ingestion	**Toxic effects** may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual. Side effects of treatment with clonidine, an agent used to reduce blood pressure, include drowsiness, dryness of the mouth (common during initial stages of treatment), anxiety, swelling of the blood vessels, pain in the cheek, coldness of the fingers, discolouration of the fingertips when cold, generalised itch, depression, dizziness, swelling, constipation, nausea, weight gain as well as poor appetite, slow heart rate, abnormalities on ECG, euphoria, headache, eye irritation, low blood pressure on standing, enlarged breasts in the male, impotence, difficulty passing urine, pins and needles, restlessness at night, skin rash, weakness and temporary high blood sugar. Overdose has resulted in high blood pressure, temporary high blood pressure, muscle weakness, vomiting, irritability, reduced or absent reflexes, lethargy, sleepiness, sedation or coma, pallor, low body temperature, slow heart rate, conduction deficits, heart rhythm disturbances, pinpoint pupils, stoppage of breathing, and seizure. Injection may produce pallor in the face. Common effects of alpha2-adrenergic agonists include · Suppression of release of norepinephrine (noradrenaline) by negative feedback. · Transient hypertension (increase in blood pressure), followed by a sustained hypotension (decrease in blood pressure). · Vasoconstriction of certain arteries. · Vasoconstriction of arteries to heart (coronary artery); however, the extent of this effect may be limited and may be negated by the vasodilatory effect from beta2 receptors · Constriction of some vascular smooth muscle · Venoconstriction of veins · Decrease motility of smooth muscle in gastrointestinal tract · Inhibition of lipolysis · Facilitation of the cognitive functions associated with the prefrontal cortex (PFC; working memory, attention, executive functioning, etc. · Sedation · Analgesia Stimulating alpha-adrenergic receptors causes blood vessels to dilate, sometimes to the extent that gangrene occurs in the fingers and toes, and there is increased blood pressure. This can also cause swelling of the lungs and bleeding in the brain.
Skin Contact	This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	This material can cause eye irritation and damage in some persons.

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	Clonidine derivatives are applied to the eye to control bleeding from the eye. Some patients being treated with clonidine showed an unpredictable drop in eye pressure control while others showed an allergic response in the eye. Whole-body effects include dizziness and sleepiness, muscle weakness, headache, chest pain, abdnomral co-ordination, malaise and swelling of the face. Other adverse effects of clonidine treatment include swelling of the eyelid, blurred vision, foreign body sensation, dry eye, inflammation of the conjunctiva, discharge, blanching, crusting around the edges of the eyelids, swelling and follicles of the conjunctiva, abnormal vision, pain, aversion to light, inflammation of the eyelash follicles, aversion to light, staining of the cornea, redness of the eyelids, erosion, infiltration and disease of the cornea, and scales and retraction of the eyelid.
Chronic	Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Animal testing showed that long-term oral administration of p-aminoclonidine did not cause an increase in tumours. There was no evidence of p-aminoclonidine causing mutations, genetic damage, or affecting fertility. However it caused death of embryos at very high doses.

Xylazine hydrochloride	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*	

Xylazine hydrochloride	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.
XYLAZINE HYDROCHLORIDE	The known doses of xylazine that produce toxicity and fatality in humans vary from 40 to 2400 mg.[4] Small doses may produce toxicity and larger doses may be survived with medical assistance.[4] Non-fatal blood or plasma concentration ranges from 0.03 to 4.6 mg/L.[11] In fatalities, the blood concentration of xylazine ranges from trace to 16 mg/L.[11] It is reported that there is no defined safe or fatal concentration of xylazine because of the significant overlap between the non-fatal and postmortem blood concentrations of xylazine. Xylazine overdose is usually fatal in humans. Because it is used as a drug adulterant, the symptoms caused by the drugs accompanying xylazine administration vary between individuals. The most common side effects in humans associated with xylazine administration include bradycardia, respiratory depression, hypotension, transient hypertension secondary to vagus nerve stimulation, and other changes in cardiac output. Xylazine significantly decreases heart rate in animals that are not premedicated with medications that have anticholinergic effects] The decrease in heart rate directly impacts aortic flow. Bradycardia caused by xylazine administration is effectively prevented by administration of atropine or glycopyrrolate. Arrhythmias associated with xylazine includes other symptoms such as sinoatrial block, atrioventricular block, A-V dissociation, and sinus arrhythmia. Xylazine administration can lead to diabetes mellitus and hyperglycemia.. Other possible side effects that can occur are areflexia, asthenia, ataxia, blurred vision, disorientation, dizziness, drowsiness, dysarthria, dysmetria, fainting, hyporeflexia, slurred speech, somnolence, staggering, coma, apnea, shallow breathing, sleepiness, premature ventricular contraction, tachycardia, miosis, and dry mouth. Rarely, hypotonia, dry mouth, urinary incontinence and nonspecific electrocardiographic ST segment changes occur. It has been reported that the duration of symptoms after human overdose is 8 to 72 hours. Chronic use is reported to be associated with physical deterioration, dependence, abscesses, and skin ulceration, which can be physically debilitating and painful. Hypertension followed by hypotension, bradycardia, and respiratory depression lower tissue oxygenation in the skin. Thus, chronic use of xylazine can progress the skin oxygenation deficit, leading to severe skin ulceration. Lower skin oxygenation is associated with impaired healing of wounds and a higher chance of infection. . Xylazine is a potent a2 adrenergic agonist. When xylazine and other a2 adrenergic receptor agonists are administered, they distribute throughout the body within 30 to 40 minutes.[15] Due to xylazine's highly lipophilic nature, xylazine directly stimulates central a2 receptors as well as peripheral a-adrenoceptors in a variety of tissues. As an agonist, xylazine leads to a decrease in neurotransmission of norepinephrine and dopamine in the central nervous system It does so by mimicking norepinephrine in binding to presynaptic surface autoreceptors, which leads to feedback inhibition of norepinephrine. Xylazine also serves as a transport inhibitor by suppressing norepinephrine transport function through competitive inhibition of substrate transport. Accordingly, xylazine significantly increases Km and does not affect Vmax. This likely occurs by direct interaction on an area that overlaps with the antidepressant binding site. For example, xylazine and clonidine suppress uptake of MIBG, a norepinephrine analog, in neuroblastoma cells.
Xylazine hydrochloride & XYLAZINE HYDROCHLORIDE	For clonidine: Clonidine may potentiate the CNS-depressive effects of alcohol, barbiturates or other sedating drugs. In patients who have developed localized contact sensitization to clonidine, continuation of treatment or substitution of oral clonidine hydrochloride therapy may be associated with the development of a generalized skin rash. The sympatholytic action of clonidine may worsen sinus node dysfunction and atrioventricular (AV) block, especially in patients taking other sympatholytic drugs. There are post-marketing reports of patients with conduction abnormalities and/or taking other sympatholytic drugs who developed severe bradycardia requiring IV atropine, IV isoproterenol and temporary cardiac pacing while taking clonidine. Most adverse effects are mild and tend to diminish with continued therapy. The most frequent (which appear to be dose-related) are dry mouth, occurring in about 40 of 100 patients; drowsiness, about 33 in 100; dizziness, about 16 in 100; constipation and sedation, each about 10 in 100. Less frequent adverse experiences include · Body as a Whole: Fatigue, fever, headache, pallor, weakness, and withdrawal syndrome. Also reported were a weakly positive Coombs' test and increased sensitivity to alcohol. Actions of the alpha2 adrenergic receptor agonists include:: decreased insulin release from the pancreas, increased glucagon release from the pancreas, contraction of sphincters of the GI-tract, negative feedback in the neuronal synapses - presynaptic inhibition of norepinephrine release in CNS, increased platelet aggregation (increased blood clotting tendency), decreases peripheral vascular resistance alpha2 Agonists can be used to treat: hypertension – decrease blood pressure raising actions of the sympathetic nervous system alpha2 Antagonists can be used to treat: impotence – relax penile smooth muscles and ease blood flow, depression – enhance mood by increasing norepinephrine secretion. The alpha2 receptor couples to the Gi/o protein. It is a presynaptic receptor, causing negative feedback on, for example, norepinephrine (NE). When NE is released into the synapse, it feeds back on the alpha2 receptor, causing less NE release from the presynaptic neuron. This decreases the effect of NE. alpha-Adrenergic receptors have actions in common, but also individual effects. Common (or still receptor unspecified) actions include: · vasoconstriction · decreased motility of smooth muscle in gastrointestinal tract Subtype unspecific alpha agonists can be used to treat rhinitis (they decrease mucus secretion). Subtype unspecific alpha antagonists can be used to treat pheochromocytoma (they decrease vasoconstriction caused by norepinephrine). Alpha-agonist toxicity may occur accidentally or intentionally. Toxicity is often due to intentional overdose and accidental pediatric ingestion. The substance exhibits effects on the adrenergic receptors The adverse effects seen with adrenergic drugs are broad. The most common side effects are changes in heart rate and blood pressure. Non-selective binding to the adrenergic receptors can cause different side effects that vary based on the specific agent as well as the dosage.

Continued...

	The common non-selective agonists are norepinephrine, epinephrine, and isoproterenol (isoprenaline). For G-protein inhibitors:/ antagonists/ modulators. G protein-coupled receptors (GPCRs) are essential cell membrane signaling molecules and represent the most important class of drug targets. Some signaling pathways downstream of a GPCR may be responsible for drug adverse effects, while others mediate therapeutic efficacy. Biased ligands preferentially activate only a subset of all GPCR signaling pathways. They hold great potential to become next-generation GPCR drugs with less side effects due to their potential to exclusively activate desired signaling pathways.

Acute Toxicity	✔	**Carcinogenicity**	✘
Skin Irritation/Corrosion	✔	**Reproductivity**	✘
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	✘	**STOT - Repeated Exposure**	✘
Mutagenicity	✘	**Aspiration Hazard**	✘

Legend: ✘ *– Data either not available or does not fill the criteria for classification*
✔ *– Data available to make classification*

SECTION 12 Ecological information

Toxicity

Xylazine hydrochloride	**Endpoint**	**Test Duration (hr)**	**Species**	**Value**	**Source**
	Not Available	Not Available	Not Available	Not Available	Not Available
Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*				

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	▸ Containers may still present a chemical hazard/ danger when empty. ▸ Return to supplier for reuse/ recycling if possible. Otherwise: ▸ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. ▸ Where possible retain label warnings and SDS and observe all notices pertaining to the product. ▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ▸ It may be necessary to collect all wash water for treatment before disposal. ▸ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▸ Where in doubt contact the responsible authority.

SECTION 14 Transport information

Labels Required

	
Marine Pollutant	NO
HAZCHEM	2X

Continued...

Land transport (ADG)

14.1. **UN number or ID number**	2811
14.2. **UN proper shipping name**	TOXIC SOLID, ORGANIC, N.O.S. (contains xylazine hydrochloride)
14.3. **Transport hazard class(es)**	Class: 6.1 Subsidiary Hazard: Not Applicable
14.4. **Packing group**	III
14.5. **Environmental hazard**	Not Applicable
14.6. **Special precautions for user**	Special provisions: 223 274 Limited quantity: 5 kg

Air transport (ICAO-IATA / DGR)

14.1. **UN number**	2811
14.2. **UN proper shipping name**	Toxic solid, organic, n.o.s. * (contains xylazine hydrochloride)
14.3. **Transport hazard class(es)**	ICAO/IATA Class: 6.1 ICAO / IATA Subsidiary Hazard: Not Applicable ERG Code: 6L
14.4. **Packing group**	III
14.5. **Environmental hazard**	Not Applicable
14.6. **Special precautions for user**	Special provisions: A3 A5 Cargo Only Packing Instructions: 677 Cargo Only Maximum Qty / Pack: 200 kg Passenger and Cargo Packing Instructions: 670 Passenger and Cargo Maximum Qty / Pack: 100 kg Passenger and Cargo Limited Quantity Packing Instructions: Y645 Passenger and Cargo Limited Maximum Qty / Pack: 10 kg

Sea transport (IMDG-Code / GGVSee)

14.1. **UN number**	2811
14.2. **UN proper shipping name**	TOXIC SOLID, ORGANIC, N.O.S. (contains xylazine hydrochloride)
14.3. **Transport hazard class(es)**	IMDG Class: 6.1 IMDG Subsidiary Hazard: Not Applicable
14.4. **Packing group**	III
14.5 **Environmental hazard**	Not Applicable
14.6. **Special precautions for user**	EMS Number: F-A, S-A Special provisions: 223 274 Limited Quantities: 5 kg

14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
xylazine hydrochloride	Not Available

14.7.3. Transport in bulk in accordance with the IGC Code

Product name	Ship Type
xylazine hydrochloride	Not Available

SECTION 15 Regulatory information

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

xylazine hydrochloride is found on the following regulatory lists

Continued...

Australia Chemicals with non-industrial uses removed from the Australian Inventory of Chemical Substances (old Inventory)	Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4

Additional Regulatory Information

Not Applicable

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	No (xylazine hydrochloride)
Canada - NDSL	No (xylazine hydrochloride)
China - IECSC	No (xylazine hydrochloride)
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (xylazine hydrochloride)
Korea - KECI	No (xylazine hydrochloride)
New Zealand - NZIoC	Yes
Philippines - PICCS	No (xylazine hydrochloride)
USA - TSCA	No (xylazine hydrochloride)
Taiwan - TCSI	Yes
Mexico - INSQ	No (xylazine hydrochloride)
Vietnam - NCI	Yes
Russia - FBEPH	No (xylazine hydrochloride)
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Revision Date	10/12/2023
Initial Date	11/12/2023

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

- PC—TWA: Permissible Concentration-Time Weighted Average
- PC—STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit。
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL: No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index
- DNEL: Derived No-Effect Level
- PNEC: Predicted no-effect concentration

- AIIC: Australian Inventory of Industrial Chemicals
- DSL: Domestic Substances List
- NDSL: Non-Domestic Substances List
- IECSC: Inventory of Existing Chemical Substance in China
- EINECS: European INventory of Existing Commercial chemical Substances
- ELINCS: European List of Notified Chemical Substances
- NLP: No-Longer Polymers
- ENCS: Existing and New Chemical Substances Inventory
- KECI: Korea Existing Chemicals Inventory
- NZIoC: New Zealand Inventory of Chemicals
- PICCS: Philippine Inventory of Chemicals and Chemical Substances
- TSCA: Toxic Substances Control Act
- TCSI: Taiwan Chemical Substance Inventory
- INSQ: Inventario Nacional de Sustancias Químicas
- NCI: National Chemical Inventory
- FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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end of SDS