SAFETY DATA SHEET

according to 1907/2006/EC, Article 3

Version no.: 2.1
Prepared on: 30.03.2019
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SECTION 1: Identification of the substance/mixture and of the company/undertaking.

1.1 Product identifiers

Product name	Piperazine
Product Number	PSI622
Brand	PureSynth research chemicals
CAS No.	110-85-0

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

Identified uses : Standard for GC

1.3 Details of the supplier of the safety data sheet

Company **PureSynth Research Chemicals Pvt. Ltd.**
FB-121, High Street mall, Kapurbawdi junction, Thane (W)

1.4 Emergency telephone number

Worldwide Helpline No.: 1800-120-1234-34

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable solids (Category 1), H228
Skin corrosion (Sub-category 1B), H314
Serious eye damage (Category 1), H318
Respiratory sensitization (Sub-category 1B), H334
Skin sensitization (Sub-category 1B), H317
Reproductive toxicity (Category 2), H361fd

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal word Danger

Hazard statement(s)

H228	Flammable solid.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements	none

2.3 **Other hazards:** This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition / information on ingredients

3.1 Substances

Common names & Synonyms	Mol. formula	CAS number
Diethylenediamine 1,4-Diazacyclohexane	$C_4H_{10}N_2$	110-85-0
Component	**Classification**	**Concentration**
Piperazine	Flam. Sol. 1; Skin Corr. 1B; Eye Dam. 1; Resp. Sens. 1B; Skin Sens. 1B; Repr. 2; H228, H314, H318, H334, H317, H361fd	<= 100 %

SECTION 4: First aid measures

Description of first aid measures

General advice	First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.
If inhaled	After inhalation: fresh air. Call in physician.
In case of skin contact	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
In case of eye contact	After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.
If swallowed	After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.
Most important symptoms and effects, both acute and delayed	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Indication of any immediate medical attention and special treatment needed	No data available

SECTION 5: Fire fighting measures

Extinguishing media	
Suitable extinguishing media	Water Foam Carbon dioxide (CO2) Dry powder
Special hazards arising from the substance or mixture	Carbon oxides Nitrogen oxides (NOx) Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.
Advice for fire-fighters	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
Further information	Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.
Environmental precautions	Do not let product enter drains. Risk of explosion.

Methods and materials for containment and cleaning up	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.
Reference to other sections	For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling	Advice on safe handling: Work under hood. Do not inhale substance/mixture. Advice on protection against fire and explosion: Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge. Hygiene measures: Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.
Conditions for safe storage, including any incompatibilities	Storage conditions: Tightly closed. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons. Storage stability: Recommended storage temperature 2 - 8 °C Storage class: Storage class (TRGS 510): 4.1B: Flammable solid hazardous materials
Specific end use(s)	Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls / Personal protection

Control parameters	Ingredients with workplace control parameters
Exposure controls	
Appropriate engineering controls	
Personal protective equipment:	
Eye / face protection	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles
Skin protection	This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves Full contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min
Body Protection	Flame retardant antistatic protective clothing.
Respiratory protection	Recommended Filter type: Filter A-(P3) The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
Control of environmental exposure	Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

Appearance	Form: Solid Colour: White
Odour	weakly amine-like
pH - Value	12 at 150 g/l at 20 °C
Density	1.1 g/cm3 at 20 °C
Boiling Point	145 - 146 °C
Melting Point	108 - 110 °C
Solubility in water	ca.0.9 g/l at 20 °C - soluble
Flash point	No data available
Vapour pressure	0.21 hPa at 20 °C
Auto -ignition temperature	320 °C at 1013 hPa - DIN 51794
Vapour density	No data available
Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1. - Flammability (solids)
Evaporation rate	No data available
Partition coefficient: n- octanol / water	log Pow: -1.24 at 25 °C - Bioaccumulation is not expected.
Viscosity	No data available
Explosive properties	No data available
Upper / lower flammability or explosive limits	Upper explosion limit: 14 %(V) Lower explosion limit: 4 %(V)
Oxidizing properties	None

Other safety information: No data available

SECTION 10: Stability and reactivity

Reactivity	The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
Chemical stability	The product is chemically stable under standard ambient conditions (room temperature).
Possibility of hazardous reactions	Caution! In contact with nitrites, nitrates, nitrous acid possible liberation of nitrosamines! Violent reactions possible with: Strong oxidizing agents Acids
Condition to avoid	Avoid moisture. No information available
Incompatible materials	Light metals, Metals, various alloys, Strong oxidizing agents
Hazardous decomposition products	In the event of fire: see section 5

SECTION 11: Toxicological information

Acute toxicity	LD50 Oral - Rat - male and female - 2600 mg/kg (OECD Test Guideline 401) Inhalation: No data available LD50 Dermal - Rabbit - male and female - 8300 mg/kg (OECD Test Guideline 402)
Skin corrosion/irritation	Skin - Rabbit Result: Corrosive

	(OECD Test Guideline 431)
Serious eye damage/eye irritation	Remarks: Causes serious eye damage.
Respiratory or skin sensitization	Local lymph node assay (LLNA) - Mouse Result: positive (OECD Test Guideline 429) May cause allergy or asthma symptoms or breathing difficulties if inhaled. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Germ cell mutagenicity	Test Type: In vitro mammalian cell gene mutation test Test system: Mouse lymphoma test Metabolic activation: Metabolic activation Method: OECD Test Guideline 476 Result: positive Test Type: Ames test Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Test Type: Chromosome aberration test in vitro Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 473 Result: negative Test Type: Micronucleus test Species: Mouse Cell type: Bone marrow Application Route: Gavage Method: OECD Test Guideline 474 Result: negative
Carcinogenicity	No data available
Reproductive toxicity	Suspected of damaging the unborn child. Suspected of damaging fertility.
Specific target organ toxicity - single exposure	No data available
Specific target organ toxicity - repeated exposure	No data available
Aspiration hazard	No data available
Additional Information	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Repeated dose toxicity - Rat - male and female - Oral - NOAEL (No observed adverse effect level) - 627 mg/kg Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Drowsiness Ataxia (impaired locomotor coordination) Unconsciousness Apathy Muscular weakness Impairment of vision

Other information: Under given conditions, contact with nitrites or nitric acid can lead to the formation of nitrosamines, which have shown themselves to be carcinogenic in animal experiments.
Further data: Therapeutically used substance. Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

Toxicity

Toxicity to fish	Semi-static test LC50 - Oryzias latipes - > 100 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	semi-static test EC50 - Daphnia magna (Water flea) – 105.4 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 153.1 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity)	semi-static test NOEC - Daphnia magna (Water flea) – 12.5 mg/l - 21 d (OECD Test Guideline 211)
Persistence and degradability	Biodegradability:
Biodegradability	aerobic - Exposure time 28 d Result: 65 % - Readily biodegradable. (OECD Test Guideline 301F)
Bio accumulative potential	Cyprinus carpio (Carp) - 6 Weeks at 25 °C(piperazine) Bioconcentration factor (BCF): 0.3 (OECD Test Guideline 305)
Mobility in soil	No data available
Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bio accumulative and toxic (PBT), or very persistent and very bio accumulative (vPvB) at Levels of 0.1% or higher.
Endocrine disrupting properties	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Other adverse effects	No data available

SECTION 13: Disposal considerations

Waste treatment methods	No data available
Products	
Contaminated packaging	Dispose of as unused product.

SECTION 14: Transport information

	UN no.	UN proper shipping name	Hazard Class(es)	Packaging group	Marine Pollutant
ADR / RID	2579	PIPERAZINE	8	III	No
IMDG	2579	PIPERAZINE	8	III	No
IATA	2579	Piperazine	8	III	No

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
Other regulation
Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.
Take note of Dir 94/33/EC on the protection of young people at work.

Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

The information in this SDS is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. The user must be determined suitability of this information for his application.