1. Product and Company Identifaction

Porduct Name	Hexamethylenediamine
Part Number	RXSOL-19-3254-010

Company Details:....

RX MARINE INTERNATIONAL
105, A wing , BSEL , TECH PARK.
VASHI ,NEW BOMBAY 400703 INDIA

Branch : Kandla, Mumbai , Chennai, Vizag, Kolkata, UAE , OMAN , CANADA and KENYA

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Email	mail@rxmarine.com
Website	www.rxmraine.com

2. Composition / Information on ingredients

Name of substance	**Hexamethylene diamine**
Molecular formula	C?H??N?
Molar mass	**116,2 g /mol**
CAS No	**124-09-4**
EC No	**204-679-6**
Index No (GB CLP)	**612-104-00-9**

Substance, Specific Conc. Limits, M-factors, ATE

Specific Conc. Limits	M-Factors	ATE	Exposure route
		1.160 mg/kg	oral
		1.900 mg/kg	dermal

3. Hazards Identification

Classification of the substance or mixture

Classification acc. to GHS

Hazard class	Category	Hazard class and category	Hazard statement
Acute toxicity (oral)	4	Acute Tox. 4	H302
Acute toxicity (dermal)	4	Acute Tox. 4	H12
Skin corrosion/irritation	18	Skin Corr. 1B	H14
Serious eye damage/eye irritation	1	Eye Dam. 1	H18
Specific target organ toxicity - single exposure (respiratory tract irritation)	3	STOT SE 3	H335

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis.

Label elements

Signal word	Danger
Hazard statements	H302+H312 Harmful if swallowed or in contact with skin H314 Causes severe skin burns and eye damage H335 May cause respiratory irritation
Precautionary statements - prevention	P260 Do not breathe dust P270 Do not eat, drink or smoke when using this product P280 Wear protective gloves/eye protection
Precautionary statements - response	P302+P352 IF ON SKIN: Wash with plenty of water P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P310 Immediately call a POISON CENTER/doctor

Other hazards

This material is combustible, but will not ignite readily.

4. First Aid Measures

Description of first aid measures

General notes	Take off immediately all contaminated clothing. Self-protection of the first aider.
Inhalation	Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.
Skin contact	After contact with skin, wash immediately with plenty of water. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.
Eye contact	In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye.
Ingestion	Rinse mouth immediately and drink plenty of water. Rinse mouth with water (only if the person is conscious). Call a physician immediately. If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects). Call a doctor.

Most important symptoms and effects, both acute and delayed

Corrosion, Vomiting, Risk of blindness, Gastric perforation, Risk of serious damage to eyes, Irritation, Cough, Dyspnoea

5. Fire-fighting Measures

Extinguishing media

Suitable extinguishing media	Co-ordinate firefighting measures to the fire surroundings! water, foam, alcohol resistant foam, dry extinguishing powder, ABC-powder
Unsuitable extinguishing media	water jet
Special hazards arising from the substance or mixture	Combustible. Vapours are heavier than air, spread along floors and form explosive mixtures with air.
Hazardous combustion products	In case of fire may be liberated: Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO?)
Advice for firefighters	In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus. Wear full chemical protective clothing.

6. Accidental Release Measures

Personal precautions	Use personal protective equipment as required. Avoid contact with skin, eyes and clothes. Do not breathe dust.
Environmental precautions	Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.
Methods and material for containment and cleaning up	**Advice on how to contain a spill** Covering of drains. Take up mechanically. **Advice on how to clean up a spill** Take up mechanically. Control of dust. **Other information relating to spills and releases** Place in appropriate containers for disposal. Ventilate affected area.
Reference to other sections	Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

7. Handling and Storage

Precautions for safe handling	Provision of sufficient ventilation. Handle and open container with care. Avoid dust formation. Clear contaminated areas thoroughly Wash hands before breaks and after work. Keep away from food, drink and animal feedingstuffs.
Conditions for safe storage, including any incompatibilities	Store in a dry place. Keep container tightly closed. Hygroscopic. Incompatible substances or mixtures Protect against external exposure, such as humidity Recommended storage temperature: 15?□?25 °C
Specific end use(s)	No information available.

8. Exposure controls and personal protection

Control parameters

National limit values

Relevant DNELs and other threshold levels

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time

DNEL	0,54 mg/m^3	human, inhalatory	worker (industry)	chronic - local effects
DNEL	1,62 mg/m^3	human, inhalatory	worker (industry)	acute - local effects

Relevant PNECs and other threshold levels

Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
PNEC	0,42 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0,04 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	29,1 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	65,35 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
PNEC	6,54 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
PNEC	3,52 mg/kg	terrestrial organisms	soil	short-term (single instance)

Exposure controls

Individual protection measures (personal protective equipment)

Eyes	Use safety goggle with side protection. Wear face protection.
Skin	Wear appropriate gloves to prevent skin exposure.
Hand protection	Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 ° C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.
other protection measures	Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.
Respiratory protection	Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). Type: A-P2 (combined filters against particles and organic gases and vapours, colour code: Brown/White).
Environmental exposure controls	Keep away from drains, surface and ground water.

9. Physical and chemical properties

Physical State	Solid
Form	Solidified melt
Colour	White
Odour	like: - amine
Melting point/freezing point	38?□?42 °C
Boiling point or initial boiling point and boiling range	199?□?204 °C at 1.013 hPa
Flammability	This material is combustible, but will not ignite readily
Lower and upper explosion limit	0,9 vol% (LEL) - 7,6 vol% (UEL)
Flash point	85 °C at 1.024 hPa (ECHA)
Auto-ignition	Temperature not determined
Water solubility	637 g /l at 20 °C (ECHA)
Partition coefficient n-octanol/water	(log value): 0,02 (25 °C) (OECD 107)
Vapour pressure	10 hPa at 78,47 °C
Density	0,83 g /cm^3 at 20 °C
Relative vapour density	3,8 (air = 1)

Particle characteristics	No data available.
Oxidising properties	none
Information with regard to physical hazard classes:	Hazard classes acc. to GHS (physical hazards): not relevant
Surface tension	71,5 mN/m (20 °C) (ECHA)

10. Stability and reactivity

Reactivity	The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.
Chemical stability	The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Possibility of hazardous reactions	Possibility of hazardous reactions Violent reaction with: strong oxidiser, Strong acid
Conditions to avoid	Humidity.
Incompatible materials	Aluminium, copper, zinc
Hazardous decomposition products	Hazardous combustion products: see section 5.

11. Toxicological information

Information on toxicological effects

Acute toxicity

Harmful if swallowed. Harmful in contact with skin.

Exposure route	Endpoint	Value	Species	Source
oral	LD50	1.160 mg/kg	rat	ECHA
dermal	LD50	1.900 mg/kg	rat	ECHA

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

If swallowed	If swallowed danger of perforation of the esophagus and the stomach (strong corrosive effects)
If in eyes	causes burns, Causes serious eye damage, risk of blindness
If inhaled	Irritation to respiratory tract, cough, Dyspnoea
If on skin	causes severe burns, causes poorly healing wounds
Other information	none

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ? 0,1%.

Information on other hazards

There is no additional information.

12. Ecological information

Toxicity

Shall not be classified as hazardous to the aquatic environment.

Aquatic toxicity (acute)

Endpoint	Value	Species	Source	Exposure time
LC50	1.825 mg/l	fish	ECHA	96 h
EC50	23,4 mg/l	aquatic invertebrates	ECHA	48 h

Aquatic toxicity (acute)

Endpoint	Value	Species	Source	Exposure time
ErC50	>100 mg/l	algae	ECHA	72 h

Aquatic toxicity (chronic)

Endpoint	Value	Species	Source	Exposure time
ErC50	1.558 mg/l	microorganisms	ECHA	3 h

Persistence and degradability

Theoretical Oxygen Demand (without nitrification): 2,34 mg/mg

Theoretical Oxygen Demand (with nitrification): 2,926 mg/mg

Theoretical Carbon Dioxide: 2,272 mg/mg

Biodegradation

The substance is readily biodegradable.

Bioaccumulative potential

Does not significantly accumulate in organisms.

Mobility in soil

Data are not available.

Results of PBT and vPvB assessment

Data are not available.

Endocrine disrupting properties

Does not contain an endocrine disruptor (ED) at a concentration of ? 0,1%.

Other adverse effects

Data are not available.

13. Disposal considerations

Waste treatment methods

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Handle contaminated packages in the same way as the substance itself. Completely emptied packages can be recycled.

Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions. Non-contaminated packages may be recycled.

14. Transport information

UN number or ID number

ADRRID	UN 2280
IMDG-Code	UN 2280
ICAO-TI	UN 2280

UN proper shipping name

ADRRID	HEXAMETHYLENEDIAMINE, SOLID
IMDG-Code	HEXAMETHYLENEDIAMINE, SOLID
ICAO-TI	Hexamethylenediamine, solid

Transport hazard class(es)

ADRRID	8
IMDG-Code	8

ICAO-TI	8

Packing group

ADRRID	III
IMDG-Code	III
ICAO-TI	III

Environmental hazards	non-environmentally hazardous acc. to the dangerous goods regulations

Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)Additional information

Proper shipping name	HEXAMETHYLENEDIAMINE, SOLID
Particulars in the transport document	UN2280, HEXAMETHYLENEDIAMINE, SOLID, 8, III, (E)
Classification code	C8
Danger label(s	8
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
Transport category (TC)	3
Hazard identification No	80

International Maritime Dangerous Goods Code (IMDG) - Additional information

Proper shipping name	HEXAMETHYLENEDIAMINE, SOLID
Particulars in the shipper's declaration	UN2280, HEXAMETHYLENEDIAMINE, SOLID, 8, III
Marine pollutant	-
Danger label(s)	8
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-B
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Proper shipping name	Hexamethylenediamine, solid
Particulars in the shipper's declaration	UN2280, Hexamethylenediamine, solid, 8, III
Danger label(s)	8
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture Relevant provisions of the European Union (EU)

Seveso Directive

2012/18/EU (Seveso III)

Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements
not assigned	

Deco-Paint Directive

VOC content 100 %

VOC content 830 g /l

Industrial Emissions Directive (IED)

VOC content 100 %

VOC content 830 g /l

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

not listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Regulation on the marketing and use of explosives precursors

not listed

Regulation on drug precursors not listed Regulation on substances that deplete the ozone layer (ODS)

not listed

Regulation concerning the export and import of hazardous chemicals (PIC)

not listed

Regulation on persistent organic pollutants (POP)

not listed

National regulations(GB) List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

not listed

Restrictions according to GB REACH, Annex 17

not listed

Other information

Directive 94/33/EC on the protection of young people at work. Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers.

Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance.

16. Other information

Other Information	The information above is believed to be accurate and represents the

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

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No information available

No information available

No information available

No information available