MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Identification

1.1 Product identifiers

Product Name : **Diethylenetriamine**

Cat No.: **D126-500**

CAS No. : 111-40-0

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

Recommended uses : Laboratory chemicals

Uses advised against: Food, drug, pesticide or biocidal product use.

1.3 Details of the supplier of the safety data sheet

Company : Krishna Solvechem Limited.
B/503, Sahayog, S. V. Road,
Kandivali (West), Mumbai – 400067. India.

Telephone : +91-22-6123 0222

Email : exports@kscl.co.in

1.4 Emergency telephone number

Emergency Phone : +91-8657457330

SECTION 2: Hazards identification

2.1 Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	(Category 4)
Acute dermal toxicity	(Category 3)
Acute inhalation toxicity – dusts and mists	(Category 2)
Skin Corrosion/Irritation	(Category 1 B)
Serious Eye Damage/Eye Irritation	(Category 1)
Skin sensitization	(Category 1)
Specific target organ toxicity (single exposure)	(Category 3)
Target Organs - Respiratory system.	

2.2 Label elements

Pictogram :

Signal word Danger

Hazard statement (s) causes severe skin burns and eye damage

Harmful if swallowed
Toxic in contact with skin
May cause an allergic skin reaction. Fatal if inhaled
May cause respiratory irritation
May cause drowsiness or dizziness

Precautionary statement (s)

Prevention

Wash face, hands and any exposed skin thoroughly after handling Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Do not eat, drink or smoke when using this product
Wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace

Inhalation :
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing Call a POISON CENTER or doctor/physician if you feel unwell

IF ON SKIN (or hair):
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse

Eyes:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention

Ingestion:
Rinse mouth. Do NOT induce vomiting

Storage:
Store locked up Store in a well-ventilated place.
Keep container tightly closed

		Disposal: Dispose of contents/container to an approved waste disposal plant
	Hazards not otherwise classified (HNOC)	None identified

SECTION 3: Composition / information on ingredients

3.1

Component	CAS-No	Weight %
Diethylene triamine	111-40-0	100

SECTION 4: First aid measures

4.1	**Description of first aid measures**	
	If inhalation :	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
	In case of skin contact :	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
	In case of eye contact :	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
	Ingestion :	Do NOT induce vomiting. Get medical attention
4.2	**Most important symptoms and effects :**	Causes burns by all exposure routes. May cause allergic skin reaction. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforationof stomach or esophagus should be investigated: Ingestion causes severe swelling, severedamage to the delicate tissue and danger of perforation: Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing
4.3	**Notes to Physician :**	Treat symptomatically

SECTION 5: Firefighting effects

5.1	**Extinguishing media**	
	Suitable extinguishing media	No information available
	Unsuitable Extinguishing Media: :	No information available
5.2	**Flash Point :**	102 °C / 215.6 °F
	Method :	No information available

	Autoignition Temperature:	395 °C / 743 °F
	Explosion Limits:	
	Upper	11.6%
	Lower	2.0%
	Sensitivity to Mechanical Impact	No information available
	Sensitivity to Static Discharge	No information available
	Specific Hazards Arising from the Chemical :	Keep product and empty container away from heat and sources of ignition.
	Hazardous Combustion Products :	None known

5.4 Protective Equipment and Precautions for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA:

Health	Flammability	Instability	Physical hazards
4	0	0	N/A

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required.

6.2 Environmental precautions

See Section 12 for additional Ecological Information. Do not flush into surface water or sanitary sewer system.

6.3 Methods and materials for containment and cleaning up

No information available

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Ensure adequate ventilation.

7.2 Conditions for safe storage

Keep containers tightly closed in a dry, cool and well – ventilated place.

SECTION 8: Exposure controls/personal protection

8.1 Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Diethylene triamine	TWA: 1 ppm Skin	(Vacated) TWA: 1 ppm (Vacated) TWA: 4 mg/m^3	TWA: 1 ppm TWA: 4 mg/m^3	TWA: 1 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures

None under normal use conditions.

8.2 Exposure controls

Personal protective equipment -

Eye / Face protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin protection and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory protection

No protective equipment is needed under normal use conditions

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice..

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Light yellow Liquid
b) Odour	Rotten – egg like
c) Odour Threshold	No information available
d) pH	12.0 Alkaline
e) Melting point / freezing point	-35 °C / -31 °F
f) Initial boiling point and	207 °C / 404.6 °F

	boiling range	
	g) Flash point	102 °C / 215.6 °F
	h) Evaporation rate	No information available
	i) Flammability (solid, gas)	Not applicable
	j) Upper/lower flammability or explosive limits	11.6% 2.0%
	k) Vapour pressure	0.37 mmHg @ 20 °C
	l) Vapour density	3.5
	m) Specific Gravity	0.9586
	n) Solubility	Soluble in water
	o) Partition coefficient: n octanol/water	No data available
	p) Auto-ignition temperature	395 °C / 743 °F
	q) Decomposition temperature	No information available
	r) Viscosity	No information available
	s) Molecular formula	C4 H13 N3
	t) Molecular Weight	103.11

SECTION 10: Stability and Reactivity

10.1	**Reactive Hazard :**	None known, based on information available
10.2	**Chemical stability :**	Stable under normal conditions.
10.3	**Possibility of hazardous reactions :**	None under normal processing.
10.4	**Conditions to avoid :**	Incompatible products.
10.5	**Incompatible materials:**	Strong oxidizing agents
10.6	**Hazardous decomposition products :**	None under normal use conditions
10.7	**Hazardous Polymerization**	Hazardous polymerization does not occur

SECTION 11: Toxicological information

11.1
Information on toxicological effects
Acute toxicity:
Product Information:
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Diethylene triamine	LD50 = 1080 mg/kg (Rat)	LD50 = 672 mg/kg (Rabbit)	0.3 mg/L/4h (Rat)

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation : No information available

Sensitization: No information available

Carcinogenicity : The table below indicates whether each agency ha Any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Diethylene triamine	111-40-0	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects: No information available.

Reproductive Effects: No information available.

Developmental Effects : No information available.

Teratogenicity: No information available.

STOT - single exposure : Respiratory system

STOT - repeated exposure: None known

Aspiration hazard : No information available.

Symptoms / effects,both acute and delayed: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptomsof allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information : No information available

Other Adverse Effects : The toxicological properties have not been fully investigated.

SECTION 12: Ecological information

12.1

Ecotoxicity:

Contains a substance which is:. Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Diethylene triamine	EC50: = 592 mg/L, 96h(Desmodesms subspicatus)EC50: = 345.6 mg/L, 96h (Pseudokirchneriella subcapitata) EC50: = 1164 mg/L, 72h(Pseudokirchneriella subcapitata)	LC50: 248 mg/L/96h (Leuciscus idus)	EC50 = 2000 mg/L 1 h EC50 = 96 mg/L 17 h	EC50: = 16 mg/L, 48h(Daphnia magna)

12.2 Persistence and degradability: Persistence is unlikely

Bioaccumulation/ Accumulation No information available

12.3 Mobility: No information available. Log pow : -1.3

SECTION 13: Disposal considerations

13.1 Waste treatment methods: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

SECTION 14: Transport information

14.1 UN number :

DOT : UN2079 TDG : UN2079

IATA : UN2079 IMDG : UN2079

14.2 UN proper shipping name

DOT : DIETHYLENETRIAMINE **TDG :** DIETHYLENETRIAMINE

IMDG : DIETHYLENETRIAMINE **IATA :** DIETHYLENETRIAMINE

14.3 Transport hazard class(es)	ADR/RID: 3	IMDG: 3	IATA: 3
14.4 Packaging group:	ADR/RID: II	IMDG: II	IATA: II

SECTION 15: Regulatory information

15.1 United states of America Inventory:

Component	CAS-No	TSCA	TSCA Inventory notification Active/Inactive	TSCA - EPA Regulatory Flags
Diethylene triamine	111-40-0	X	ACTIVE	-

Legend:

TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed
TSCA 12(b) - Notices of Export Not applicable

International Inventories:
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia(AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Diethylene triamine	111-40-0	X	-	203-865-4	X	X	X	X	X	KE-01357

U.S. Federal Regulations

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

15.2 U.S. State Right-to-Know Regulations:

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Diethylene triamine	X	X	X	-	X

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security - This product does not contain the any DHS Chemicals.

Other International Regulations

Mexico – Grade Slight risk, Grade 1

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Diethylene triamine	111-40-0	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantitiesfor Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantitiesfor Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Diethylene triamine	111-40-0	Not applicable	Not applicable	Not applicable	Not applicable

SECTION 16: Other information

16.1 Prepared By: Regulatory affairs
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Revision Summary: This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under29 C F R 1910.1200 to align with the Globally Harmonized System ofClassification and Labeling of Chemicals (GHS).

16.2 Disclaimer:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.