BloomchemAG	MATERIAL SAFETY DATA SHEET	MSDS No.	DEA-01
Bloomchemag Private Limited	DIETHYLAMINE	Effective From	26 .04.2014

SECTION 1 - IDENTIFICATION OF A SUBSTANCE

1.1 Product identifier

Product name	Diethylamine
Synonyms	Diethylamine
Chemical name and formula	2,2-diethylamine and $(CH_3CH_2)_2NH$
Trade name	DEA
CAS No.	109-89-7
REACH Pre Registration Number	05-2114087616-39-0000

1.2 Use of the substance/mixture Applications:

PHARMACEUTICALS:

- As raw material for Anaesthetics like Xylocaine, Procaine and Novacaine
- As a raw material for Antimalarials such as Amidoquin. Novaldiamine.
- As an Intermediate for Chiorquin Phosphate and in the manufacture of Riboflavin (Vitamin B2)
- As an intermediate in manufacturing of Ampicilin, Amoxycillinh Diclofenac ethyl salt.
- To manufacture intermediate like Diethyl Amino Ethanol and disinfactant like Sodium Diethyldithio Carbamate (SDEDC.)

AGRO CHEMICALS:

- As a raw material for Herbicides like Atrazine, SimazineandCyanazine.
- As raw material for Pesticides like Thfbencarb and Pesticide intermediates like Diethyl Aceto
- Acetamide used in the manufacture of Phosphamidon and Napropropamide.

RUBBER CHEMICALS :

• As a raw material for manufacture of primary accelerators like Zinc Diethyl Dithio Carbamate (ZDDC)

DYESTUFF

• As a raw material in the manufacture of intermediates like p-Diethylamine Benzaldehyde.

OIL FIELD CHEMICALS:

• As corrosion Inhibitors for Sour Well Gases.

PLASTIC INDUSTRY :

• As Urethane Chain stopper and a Plasticizer for Cellulose Acetate and in intermediates for stabilization of Plastic Monomers

CONSUMER PRODUCT :

• As raw material in the manufacture of insect Repellents like N,N-Diethylm-Toluamide (DEET) and DEPA

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1.3 Company/undertaking identification

Full address	Bloomchemag Private Limited
	E3, First Floor, Amity Innovation Incubator,
	Amity University, Sector 125, Noida-201301, India
	Phone +91120 4659134
	Fax 91-120-4659009
Emergency telephone	+91 96500 81594 /+91 96500 91594/ +91 98106 81594
	Mr. Rajesh Sethi

SECTION 2 - HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture to CLP (and CHIP where applicable)

Hazard Class and Category Code(s)

Class : 3 Subsidiary Class : 8 Packing Group : II

Hazard statement Code(s)

UN-No : UN1154

F:R11

C:R35

Xn : R20/21/22 : Harmful by inhalation, in contact with skin and if swallowed

S1/2: Keep locked up and out of the reach of children

S3 : Keep in a cool place

S16 : Keep away from sources of ignition - No smoking

S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

- S29 : Do not empty into drains
- S33 : Take precautionary measures against static discharges
- S36/37/39 : Wear suitable protective clothing, gloves and eye/face protection

S45 : In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP/GHS)

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking
- P233 Keep container tightly closed
- P240 Ground/bond container and receiving equipment
- P241 Use explosion-proof electrical/ventilating/lighting/equipment
- P242 Use only non-sparking tools
- P243 Take precautionary measures against static discharge
- P280 Wear protective gloves/protective clothing/eye protection/face protection
- P264 Wash face thoroughly after handling
- P270 Do not eat, drink or smoke when using this product

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P271 - Use only outdoors or in a well-ventilated area

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P264 - Wash face, hands and any exposed skin thoroughly after handling

Classification of the substance or Mixture:

H225 : Flam. Liq. cat. 2 H302 : Acute oral Tox. cat. 4 H311 : Acute dermal Tox. cat. 3 H332 : Acute inhalation Tox. cat. 4 H314 : Skin Corr. cat. 1A H318 : Eye Damage cat. 1 H335 : STOT SE cat. 3

2.2. Label elements (CLP only) Labeling according to Regulation (EC) No 1272/2008 (CLP/GHS) HAZARD PICTOGRAM:



Danger ! HAZARD STATEMENTS :

H225 - Highly flammable liquid and vapor

- H332 Harmful if inhaled
- H311 Toxic in contact with skin
- H302 Harmful if swallowed
- H314 Causes severe skin burns and eye damage
- H335 May cause respiratory irritation

PRECAUTIONARY STATEMENTS :

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

- P280 Wear protective gloves/protective clothing/eye protection/face protection
- P312 Call a POISON CENTER or doctor/physician if you feel unwell

P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing

P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

2.2.2. Labeling according to Directive 67/548/EEC (DSD):

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Classification and labeling according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and take into account the intended product use

HAZARD STATEMENTS:

- H225 Highly flammable liquid and vapor
- H332 Harmful if inhaled
- H311 Toxic in contact with skin
- H302 Harmful if swallowed
- H314 Causes severe skin burns and eye damage
- H335 May cause respiratory irritation

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P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Rinse skin with water/shower.

P301+P330+P331- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

P310 - Immediately call a POISON CENTER or doctor/physician.

2.3. Other hazards Substance meets the criteria for PBT OR vPvB according to Regulation (EC)

1907/2006, Annex XIII No data found

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS	
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Constituent	Typical concentration	Concentration range	Remarks
Diethylamine	99.50 % (w/w)	>99<=99.909%(w/w)	As per the attached
EC # 203-716-3			report in the dossier
CAS # 109-89-7			

Impurity	Typical concentration	Concentration range	Remarks
Water CAS # 7732-18-5	< 0.2 %	0.2>=0.10 % (w/w)	As per the attached report in the dossier

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SECTION 4 - FIRST AID MEASURES

If symptoms persist, call a physician. Show this material safety data sheet to the doctor in attendance. Subdivision of information according to route of exposure

Eyes:

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
- Obtain medical attention

Skin:

- Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes
- Consult a physician

Inhalation:

- Remove from exposure, lie down.
- Move to fresh air
- If breathing is difficult, give oxygen
- If not breathing, give artificial respiration
- Symptoms may be delayed
- Immediate medical attention is required

Ingestion:

- Drink plenty of water
- Never give anything by mouth to an unconscious person
- Do not induce vomiting
- Immediate medical attention is required
- Most important symptoms and effects, both acute and delayed :
- Causes skin and eye burns
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach
- Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough
- Risk of serious damage to the lungs (by inhalation)
- Aspiration may cause pulmonary edema and pneumonitis
- Symptoms may be delayed

SECTION 5 - FIRE FIGHTING MEASURES

General Information

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel

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to a source of ignition and flash back. Will burn if involved in a fire. Containers may explode in the heat of a fire. Flammable liquid and vapor. Suitable extinguishing media carbon dioxide (CO₂) Water spray Dry chemical Alcohol-resistant foam Auto ignition Temperature: 312°C Flash Point: -26°C Explosion Limits: 1.8 - 10.1 vol. % NFPA Rating: Health: 3; Flammability: 3; Instability: 0

Hazards during fire-fighting

Substance/product is dangerous when exposed to heat or flames. If product is heated above decomposition temperature, toxic vapours will be released

Fire Hazards in Presence of Various Substances

Flammable in presence of open flames, sparks and static discharge, of heat, of oxidizing materials.

Protective equipment for fire-fighting

Fire fighters should be equipped with self-contained breathing apparatus and turn-out gear

Further information

If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

- > Avoid contact with skin, eyes and clothing.
- Evacuate personnel to safe areas.
- ▶ Keep people away from and upwind of spill/leak.
- > Wear self-contained breathing apparatus and protective suit.
- Rubber gloves.
- Rubber or plastic boots.

Environment precautions:

- Remove immediately adhering matter
- Hose down gases, fumes and/or dust with water
- Prevent product from entering drains
- > Do not flush into surface water or sanitary sewer system

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Methods and materials for containment and cleaning up :

- Use explosion-proof equipment
- Wear self-contained breathing apparatus and protective suit
- > Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container
- > Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container
- Neutralize with hydrochloric or sulfuric acids

SECTION 7 - HANDLING & STORAGE

7.1 Handling

- Use product only in closed system
- Use only in area provided with appropriate exhaust ventilation
- Use spark-proof tools and explosion-proof equipment
- Wear personal protective equipment
- Do not eat, drink or smoke when using this product
- Wash hands after handling
- Remove contaminated clothing and protective equipment before entering eating areas
- Ensure that eyewash stations and safety showers are close to the workstation location
- Avoid breathing vapors or mists

Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Conditions for safe storage, including any incompatibilities:

- Protect from light
- Keep in properly labelled containers
- Keep away from open flames, hot surfaces and sources of ignition
- Keep container tightly closed
- Keep in a dry, cool and well-ventilated place

7.2 Storage

- Avoid extreme heat.
- Keep away from sources of ignition No smoking
- Keep in a dry, cool and well-ventilated place
- Containers should be stored tightly sealed in a dry place.
- Keep container tightly closed
- Store full or partially full containers in an upright position, tightly closed in a cool, dry, well ventilated facility designed for flammable liquids.
- Store away (segregate) from acids, oxidizers, and explosives.
- Handle containers in a safe manner using proper equipment and avoiding damage to the containers.

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• Once liquid solvent has been completely dispensed, containers which appear "empty" should be handled in the same manner as when they were "full" of liquid solvent.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

8.1 Exposure limit values

Chemical name Diethylamine ACGIH TLV TWA: 5 ppm STEL: 15 ppm Skin Japan TWA: 10 ppm TWA: 30 mg/m³

8.2. Exposure controls 8.2.1. Occupational exposure controls

a) Respiratory protection

In the case of vapor formation use a respirator with filter model K Self-contained breathing apparatus (EN 133) (in case of higher concentration).

(b) Hand protection

- Neoprene gloves
- Solvent-resistant gloves (butyl-rubber)
- The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it
- The suitability for a specific workplace should be discussed with the producers of the protective gloves

c) Eye protection

- Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists
- Contact lenses should not be worn.
- Respirator with a full face mask

(d) Skin protection

Wear suitable protective equipment Complete suit protecting against chemicals

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(e) Clothing:

Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Body protection:

- Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.
- General safety and hygiene measures:
- Eye wash fountains and safety showers must be easily accessible.
- Wear protective clothing as necessary to prevent contact.

8.2.2. Environmental exposure controls

- Prevent product from entering drains
- Do not contaminate surface water
- Avoid subsoil penetration

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 General Information

- Physical State: Liquid
- Odour: Ammoniacal
- Colour: Colorless
- Molecular Weight: 73.14 g/mol

9.2 Important health, safety and environmental information

pH value	13 (@100 g/l, 20°C)
Boiling point	55.5°C
Vapor pressure	316 hPa @ 25 °C
Vapor Density	2.5 (Air = 1.0)
Flash Point	-26°C
Viscosity	0.319 mPas @ 25°C
Partition coefficient:noctanol/ water	log Pow : 0.58
Water solubility	completely miscible
Oxidizing Properties	None
Explosion Limits	1.8 - 10.1 vol. %
Explosive Properties	Not explosive
Flammability	highly flammable (The substance or mixture is not
	classified as pyrophoric)
Autoignition Temperature	312°C

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SECTION 10 - STABILITY AND REACTIVITY

Stable under normal conditions Hazardous polymerisation does not occur

10.1. Conditions to avoid

- Heat, flames and sparks
- Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors)
- Handle under nitrogen, protect from moisture

10.2. Possibility of hazardous reactions

None under normal processing

10.3. Hazardous decomposition products

- Heating or fire can release toxic gas
- Nitrogen oxides (NOx)
- Carbon monoxide
- Ammonia
- Hazardous Polymerization has not been reported

10.4. Incompatible materials to avoid

- Zinc
- Copper
- Aluminum
- Strong acids and oxidizing agents
- Halogenated hydrocarbons

SECTION 11 - TOXICOLOGICAL INFORMATION

Acute toxicity

- LD50/oral/rat = 540 mg/kg
- LD50/dermal/rabbit = 582 mg/kg
- LC50/inhalation/4h/rat = 17.3 mg/l
- Eye irritation: corrosive
- Skin irritation: corrosive
- Sensitization: No sensitization responses were observed
- Mutagenic Effects: Did not show mutagenic effects in animal experiments
- Reproductive toxicity: Not expected
- Carcinogenic effects: Not expected

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- Specific target organ systemic toxicity (repeated exposure): NOAEC : 47 mg/m³, Inhalation, rat, after 93 days
- Target Organ Effects: Nose

Toxicity to Human

Human experience:-

- Causes skin and eye burns
- Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough
- Risk of serious damage to the lungs (by inhalation)
- Aspiration may cause pulmonary edema and pneumonitis
- If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach Symptoms may be delayed

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Ecotoxicity

- Toxicity to fish LC50 : 25-182 mg/l
- EC50/48h/Daphnia magna = 4.6 mg/l
- LC50/96h/algae = 20 mg/l
- Toxicity to bacteria EC10 (30 min) : >1000 mg/l

Bioaccumulation :

Bioconcentration factor (BCF) ~ 1.62

Results of PBT and vPvB assessment

- This substance is not considered to be persistent, bioaccumulating nor toxic (PBT)
- This substance is not

considered to be very persistent nor very bioaccumulating (vPvB)

Other adverse effects

None known based on information supplied

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste disposal of substance:

Should not be released into the environment.

Container disposal:

Empty containers should be taken to an approved waste handling site for recycling or disposal

SECTION 14 - TRANSPORT INFORMATION

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Land transport

Class: 3 Subsidiary Class: 8 UN-No: UN1154 Packing Group: II Marine pollutant: no **Proper Shipping Name: Diethylamine**

Sea transport

Class: 3 Subsidiary Class: 8 UN-No: UN1154 Packing Group: II Marine pollutant: no **Proper Shipping Name: Diethylamine**

Air transport

Class: 3 Subsidiary Class: 8 UN-No: UN1154 Packing Group: II Marine pollutant: no Proper Shipping Name: Diethylamine

SECTION 15 - REGULATORY INFORMATION

Other regulatory information European/International Regulations European Labeling in Accordance with EC Directives List of relevant R-phrases

- R11 Highly flammable
- R20/21/22 Harmful by inhalation, in contact with skin and if swallowed
- R35 Causes severe burns
- S 1/2 Keep locked up and out of the reach of children
- S 3 Keep in a cool place
- S16 Keep away from sources of ignition No smoking
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S29 Do not empty into drains
- S33 Take precautionary measures against static discharges
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
- WGK (Water Danger/Protection)

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• CAS # 109-89-7

Canada

CAS# 109-89-7 is listed on Canada's DSL List

Canadian WHMIS Classifications: B2, D1B, E

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations. CAS# 109-89-7 is listed on Canada's Ingredient Disclosure List

US Federal TSCA

CAS # 109-89-7 is listed on the TSCA Inventory.

NFPA HAZARD RATING



HEALTH: 3 Can cause serious or permanent injury . FLAMMABILITY: 3 Can be ignited under almost all ambient temperature . REACTIVITY: 0 Stable .

HMIS HAZARD RATING



Health: 3 Major injury likely unless prompt action is taken and medical treatment is given. Fire: 3 Material capable of ignition under almost all normal temperature conditions . Instability: 0 Minimal hazards. Normally stable, even under fire conditions, and will not react with water.

15.2. Chemical Safety Assessment

Chemical safety assessment: A chemical safety assessment has been carried out for the substance or the mixture by the supplier. (LR)

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OTHER

E = GlovesSplash goggles.



SECTION 16 - OTHER INFORMATION

Technical Advice

- Set priorities concerning the safety in the organization
- Create emergency plans for the assessed hazards;
- Organize occupational health care and regular surveys as necessary;
- Organize contacts with authorities/laboratories to create a monitoring system for chemical hazards, and to reliably measure and/or estimate occupational exposures to chemicals when needed;
- Start collecting case studies of accidents and sickness records in the enterprise to create a basis for priority measures in the control of hazards;
- Involve workers in safety organizations, such as the system of Safety Representatives and Committees.
- Do regular inspection using checklists made for the particular chemicals and chemical processes in use;
- Mark and label all chemicals;
- Keep at hand an inventory list of all chemicals handled in the place of work together with a collection of Chemical Safety Data Sheets for these chemicals;
- Train workers to read and understand the Chemical Safety Information, including the health hazards and routes of exposure; train them to handle dangerous chemicals and processes with respect;
- Plan, develop and choose the safe working procedures;
- Reduce the number of people coming into contact with dangerous chemicals;
- Reduce the length of time and/or frequency of exposure of workers to dangerous chemicals;
- Train workers to know and understand the emergency procedures;
- Equip and train workers to use personal protective equipment properly after everything possible has been done to eliminate hazards by means of other methods;

Full text of R-phrases

F : R11 C : R35 Xn : R20/21/22

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Risk Phrases:

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

Safety Phrases:

S1/2: Keep locked up and out of the reach of children

S3 : Keep in a cool place

S16 : Keep away from sources of ignition - No smoking

S26 : In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

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S33 : Take precautionary measures against static discharges

S45 : In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

List of Hazard Statements

H225 Highly flammable liquid and vapor

- H332 Harmful if inhaled
- H311 Toxic in contact with skin

H302 Harmful if swallowed

H314 Causes severe skin burns and eye damage

H335 May cause respiratory irritation

Key Legend Information:

ACGIH- American Conference of Govermental Industrial Hygienists OSHA- Occupational Safety and Health Administration NTP- National Toxicology program IARC- International Agency for Research on Cancer ND- Not Determined N/A- Not available R-phrases- Risk phrases S-phrases- Safety phrases

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