



9-9/1 Soi G 12 WHA Eastern Industrial Estate (Map
Ta Phut), Pakomsongkrohraj Road, Map Ta Phut,
Muang Rayong, Rayong 21150
Tel. +66 3899 4000 Fax: +66 3897 7111

SAFETY DATA SHEET

Trade name: DIETHANOLAMINE

SDS No. 002-1

Issued date : 1 July 2022

Rev. 01

1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier:

Substance name: Diethanolamine

Synonyms: 2,2'-iminodiethanol, Ethanol, 2,2'-iminobis-, Bis(hydroxyethyl)amine

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

Relevant identified uses of the substance or mixture

Uses by workers in industrial settings;

Manufacturing of DEA

Formulation of products containing DEA. Use as an intermediate processing aid for paper, textile, leather Gas treatment, additive in plastic (Industrial, Professional), e.g. rubber, a laboratory chemical (Industrial, Professional), additive in fuel. Use in metal working fluids, detergents, cleaners (Industrial, Professional). Use of fuel (Industrial, Professional). Use of DEA in wood protection formulations (Industrial)

Uses by professional workers;

Use as additive in concrete and cement (Professional). Processing aid for paper, textile, leather. Use in metal working fluids, detergents and cleaners (Industrial, Professional), as additive in plastic (Industrial, Professional), e.g. rubber, a laboratory chemical (Industrial, Professional) Use of fuel (Industrial, Professional).

Uses by Consumers;

Use of concrete and cement (Consumer), fuel (Consumer). Use in detergents and cleaners (Consumer), wood protection formulations (Consumer).

Uses advised against;

None known



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Details of the supplier of the safety data sheet

Address:

PTT Global Chemical Public Company Limited
9-9/1 Soi G12, Hemaraj Eastern Industrial Estate, Pakorn Songkhraorat Road,
Tambon Maptaphut, Amphoe Mueang Rayong, Rayong 21150, Thailand
Telephone no.+66(0)38994000 Ext. 7095
Fax no.+66(0)38925988

Emergency telephone

For medical advice (in Thailand):

+66(0)38994000 Ext. 7095

In case of transport incidents and other emergencies (advice in Thailand):

+66(0)38994000 Ext. 7095

Advice on Safety Data Sheet

Chatree.k@pttgcgroup.com

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 (CLP)

Acute Tox. 4; H302 Short term Toxicology: Hazard Category 2 (Toxic to aquatic life)

Eye Dam. 1; H318 Long term Toxicology: Hazard Category 3 (This substance is harmful to aquatic life with with long
Skin Irrit. 2; H315 lasting effects)

STOT RE 2; H373

Classification in accordance with Directive 67/548/EEC or 1999/45/EC

Xi; R38

Xi; R41

Xn; R22

Xn; R48/22

Label elements

Labeling according to Regulation (EC) No 1272/2008 (CLP Regulation)

Product identifier

111-42-2 (2,2'-iminodiethanol)



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Hazard pictograms:

GHS05: Corrosion



GHS07: Exclamation mark



GHS08: Health Hazard



Signal word: Danger

Hazard statements

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H373	May cause damage to organs through prolonged or repeated exposure
H401	Toxic to aquatic life
H412	Harmful to aquatic life with long lasting effects

Precautionary statements

P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352	IF ON SKIN: Wash with plenty of soap and 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 or doctor/physician.
P314	Get medical advice/attention if you feel unwell.
P330	Rinse mouth.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362	Take off contaminated clothing and wash before reuse.
P501	Dispose of contents/container to hazardous or special waste collection point.



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3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance / product identification

Substance name: 2,2'-iminodiethanol

CAS no.: 111-42-2

EC no.: 203-868-0

Chemical name	Concentration (%)
1. Ethanol, 2,2'-iminobis-	99.00 - 99.90

4. FIRST AID MEASURES

After inhalation:

If irritation, headache, nausea, or drowsiness occurs, remove to fresh air. Get attention if breathing become difficult or respiratory irritation persists.

After skin contact:

Immediately remove contaminated clothing and shoes. Under a safety shower, flush skin thoroughly with large amounts of running water for at least 15 minutes. Do not attempt neutralize with chemical agents. Get medical attention immediately. Discard or decontaminate clothing and shoe before reuse.

After eye contact:

Immediately flush eyes with large amounts of running water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Do not neutralize with chemical agents. Obtain medical attention immediately. Continue flushing for an additional 15 minutes if medical attention is not immediately available.

After swallowing:

If person is conscious and can swallow, immediately give two glasses of water (16 oz.), induce vomiting as directed by medical personnel. Do not induce vomiting or give anything by mouth to an unconscious or convulsing person.

Other Instruction:

None.



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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media:

Use water spray, dry chemical, Foam or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water of foam may cause frothing.

Special risks:

None

Special protective equipment for fire-fighter:

Wear full protective clothing and positive pressure breathing apparatus. Approach fire from upwind to avoid hazardous vapors and toxic decomposition product.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Remove persons to safety.

Environmental precautions

Do not discharge into the subsoil/soil. Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up/taking up

Pick up with absorbent material. Send in suitable containers for recovery or disposal. Dilute with plenty of water. Dispose of absorbed material in accordance with the regulations.



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7. HANDLING AND STORAGE

Handling:

Precautions for safe handling

Minimum feasible handling temperatures should be maintained. Eye wash should be available nearby when this product is handled or used.

Storage:

Requirement for storage rooms and vessels

Requirements for storage rooms and vessels. Use steel or stainless steel containers. Only use containers that are approved specifically for the substance/product. Avoid direct sunlight, outdoor area and lower or higher temperature, suitable temperature is 28-35 degree Celsius.

Further information on storage conditions

Periods of exposure to high temperatures should be minimized. Avoid directly contact with sunlight and higher temperature. Keep container tightly closed without air contamination. Water contamination should be avoided.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

Exposure limit for the total product:

Diethanollamine: 2 mg/m³ (0.46 ppm) TWA-ACGIH: skin notation

Exposure controls:

Personal protective equipment:

Respiratory protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contamination or oxygen content is unknown.

Eye /Face protection:

avoid eye contact. Chemical type goggles should be worn. Do not wear contact lense



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Skin protection: Protective clothing such as coveralls or lab coats must be worn. Launder or dry-clean when soiled. Gloves resistant to chemicals and petroleum distillates should be worn. Exposed workers should wash exposed skin several times daily with soap and water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	liquid
Color:	Clear liquid
Odor:	ammonia-like
pH value	11.5
Melting point/freezing point	27 °C
Boiling temperature	269.9 °C
Flash point	154.4 °C
Flammable limits lower	1%
upper	17%
Vapor pressure (20°C)	<0.01 mm Hg
Specific gravity (20°C)	1.0919
Solubility in water	miscible

10. STABILITY AND REACTIVITY

Conditions to avoid

This material reacts violently with acids. This material incompatible with strong oxidizing agents. This material is corrosive to copper, zinc, aluminum and their alloys. Do not add or formulate with nitrites. Toxic levels of ammonia, combustion products of nitrogen, carbon dioxide, carbon monoxide, irritating aldehydes and ketones may be formed on burning in a limited air supply.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD₅₀ (oral, rat): ca. 1100 mg/kg bw (OECD Guideline 401)

LC₅₀ (dermal, rat): inhalation (vapor), 8 hr, (whole body) LC0 (8 h): 0.2 mg/L air (OECD Guideline 403)

Dermal: no reliable data is available.



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Irritation index estimation of irritation (species):

Skin(rabbit) : > 3.00-5.00/8.0 moderately irritating

Eye irritation test (rabbit): 50.00-80.00/110 severely irritating

Sub acute to chronic toxicity :

In a chronic (two years) exposure study, sponsored by the National Toxicology Program (NTP), rats and mice were dermally exposed to Diethanolamine (DEA). Both male and female mice showed an increased incidence of liver tumors, and male mice showed an increased incidence of kidney tumors. In contrast, male and female rats did not show any increased incidence of tumors. NTP concluded, using their standard classification scheme, that there is "no evidence" of cancer in male and female rats, and "clear evidence" of liver and kidney cancer in male mice and "clear evidence" of liver cancer in female mice.

The American Chemistry Council (ACC) alkanolamines Panel, with the cooperation of the NTP, investigated the conduct of this study and concluded that the experimental design of the study was seriously flawed in a number of areas, In addition, the results of the NTP study are not consistent with other scientific studies investigating the carcinogenic potential of DEA. The flawed experimental design as well as the inconsistency of the NTP mouse study results with other studies, have resulted in questions over the relevance of the NTP study to establish the risk of cancer in humans from exposures to DEA.

The ACC Alkanoamines Panel is currently sponsoring mechanistic research on DEA, investigating the role of non-genotoxic mechanisms of carcinogenicity as applied to the DEA exposures in the NTP study. Results from this research program indicate that mice administered DEA via dermal (and oral) routes of exposure had significantly lower levels of choline and phospholine. Other research has shown that rodents chronically fed choline deficient diets, resulting in a cholinephosphocholine deficiency, develop liver tumors. In addition, due to the known differences in metabolism between rodent and humans, rodents are expected to be far more sensitive to the effects of choline depletion than humans. Although additional research in this area is still underway, the results to date of our research program indicate that the tumors observed in the NTP mouse study resulted from a mechanism that is not relevant to humans.

Diethanolamine Developmental and Reproductive Toxicity:

Laboratory animal studies investigating the developmental toxicity of DEA have indicated that DEA exposures, either oral (gavage) or dermal, do not result in any specific developmental toxicity. Although some minor developmental delays were observed in rat demal exposure studies, these effects were secondary to extreme maternal toxicity from exposure to relatively high levels of DEA.



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STOT-single exposure

DEA has not been classified for STOT SE.

STOT-repeated exposure

DEA is classified as STOT Rep. Exp. 2 (Hazard statement: H373: May cause damage to organs through prolonged or repeated exposure.

Affected organs: liver, blood

12. ECOLOGICAL INFORMATION

Aquatic toxic:

Short-term toxicity (Hazard Category 2: Toxic to aquatic life)

Fish, Pimephales promelas, LC50 (96 h): 1460 mg/L. (ASTM-Standard E 729-80)

Aquatic invertebrates, Daphnia magna, EC50 (48 h): 55 mg/L (EPA 660/3-75-009)

Algae (based on: cell count) , Pseudokirchnerella subcapitata, EC50 (96 h): 2.2 mg/L (EPA 600/9-78-018)

Long-term toxicity (Hazard Category 3 This substance is harmful to aquatic life with with long lasting effects.)

Aquatic invertebrates, Daphnia magna, NOEC (21 d): 0.78 mg/L(draft EEC-guideline XI/681/86)

Mobility:

DEA is not expected to selectively partition and absorb to soil or sediments.

Persistence and Biodegradability:

DEA is ready biodegradable and is not expected to persist in the environment.

Potential to Bioaccumulate:

DEA is not expected to bioaccumulate ($\log K_{ow} = -1.43$)

Based on a measured log Kow of -2.18 (25 °C) the bioaccumulation potential of the substance is expected to be low.

Remark:

None



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13. DISPOSAL CONSIDERATIONS

Waste disposal method:

This product has been evaluated for RCRA characteristics and does not meet the criteria of a hazardous waste if discarded in its purchased form. Under RCRA, it is the responsibility of the product to determine at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes etc. may render the resulting materials hazardous.

14. TRANSPORT INFORMATION

DOT:

Properly shipping name:

Not regulated for drums. For larger containers, consult MSDS and shipping papers for proper shipping description.

Hazard Class:

Not regulated

Identification number:

Not regulated

Packing group:

Not regulated

Label required:

Not regulated

IMDG

Not regulated

ICAO

Not regulated



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15. REGULATORY INFORMATION

International regulation:

TSCA Inventory Status :

This product, or its components, or are exempt from the Toxic Substance Control Act (TSCA) Chemical Substance Inventory.

WHMIS classification:

Class D, Div 2, Subdiv B: Irritant.

Canadian Inventory Status:

This product, or its components, are listed on or are exempt from the Canadian Domestic Substance List (DSL).

EINECS Inventory Status:

This product, or its components, are listed on or are exempt from the European Inventory of Existing Chemical Substances (EINECS) or the European List of Notified Chemical Substances (ELINCS).

Australian Inventory Status:

This product, or its components, are listed on or are exempt from the Australian Inventory of Chemical Substances (AICS).

Japan Inventory status:

This product, or its components, are listed on or are exempt from the Japan Ministry of International Trade and Industry (MITI) inventory.

China Inventory status:

This product, or its components, are listed on or are exempt from the Inventory of Existing Chemical Substances in China (IECSC).

Korea Inventory status:

This product, or its components, are listed on or are exempt from Korea Existing and Evaluated Chemical Substances (KECL) inventory.



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New Zealand Inventory status:

This product, or its components, are listed on or are exempt from **New Zealand** Inventory of Chemicals (NZIoC).

Philippine Inventory status:

This product, or its components, are listed on or are exempt from Philippine Inventory of Chemicals and Chemical Substances (PICCS).

16. OTHER INFORMATION

Further information

Do not add nitrites. This product contains amines which can combine with nitrites or other nitrosating agent to form nitrosamines. Many nitrosamines have been found to cause cancer in laboratory animals. A component of this product carries "SKIN" notation. "SKIN" notation indicates possible adverse health effects as result of absorption through the skin, mucous membranes, by contact with vapor, mist, spray or liquid. Appropriate measures should be taken to minimize contact.