

SECTION 1: Identification

1.1. Identification

Product form	: Substance
Substance name	: Diethanolamine
CAS-No.	: 111-42-2
Synonym	: 2,2'-iminodiethanol; DEA; DEA HP; DEA SHP; diolamine; ethanol, 2,2'-iminobis

1.2. Recommended use and restrictions on use

Product usage	: Manufacture of substance, Formulation and (re)packaging of substances and mixtures, use as an intermediate, use in construction chemicals (e.g. cement and concrete), gas treatment, use in metal working fluids, metal working fluids/rolling oils, use as additive in PU systems, use as a laboratory chemical.
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1.3. Supplier

INEOS Oxide	INEOS Derivatives Lavera SAS
21255 A Louisiana Hwy 1 South	Avenue de la bienfaisance BP 6
Block 5501	FR-13117 Lavera
Plaquemine, Louisiana 70764	France
USA	T +33 4 42 35 80 00
T (866) 865-4765	
www.ineosoxide.com	

1.4. Emergency telephone number

Emergency number	: 1-703-572-3887 (Outside the US) Chemtrec: + (800) 424-9300
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SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Skin corrosion/irritation Category 2	H315	Causes skin irritation
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage
Reproductive toxicity Category 2	H361fd	Suspected of damaging fertility or the unborn child (Inhalation, Dermal, oral)
Specific target organ toxicity (repeated exposure) Category 2	H373	May cause damage to organs through prolonged or repeated exposure (Inhalation, Dermal, oral)

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US)	: Danger
Hazard statements (GHS US)	: H302 - Harmful if swallowed H315 - Causes skin irritation H318 - Causes serious eye damage H361 - Suspected of damaging fertility or the unborn child (Inhalation, Dermal, oral)

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Precautionary statements (GHS US)

H373 - May cause damage to organs through prolonged or repeated exposure (Inhalation, Dermal, oral)

: P201 - Obtain special instructions before use.

P202 - Do not handle until all safety precautions have been read and understood.

P260 - Do not breathe dust, fume.

P264 - Wash thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P301+P312 - If swallowed: Call a POISON CENTER, a doctor if you feel unwell.

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.

P308+P313 - If exposed or concerned: Get medical advice/attention.

P310 - Immediately call a POISON CENTER, a doctor.

P314 - Get medical advice/attention if you feel unwell.

P321 - Specific treatment (see supplemental first aid instruction on this label).

P330 - Rinse mouth.

P332+P313 - If skin irritation occurs: Get medical advice/attention.

P362+P364 - Take off contaminated clothing and wash it before reuse.

P405 - Store locked up.

P501 - Dispose of contents / container by a local waste disposal company according to regional regulations.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

No additional information available

SECTION 3: Composition/Information on ingredients

3.1. Substances

Name : Diethanolamine

CAS-No. : 111-42-2

Name	Synonym	Product identifier	%
2,2'-iminodiethanol	Diethanolamine	CAS-No.: 111-42-2	≥ 99.3

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general

: Observe (own) safety. If possible, approach victim and check vital functions. Treat symptoms starting with most life-threatening injuries and disorders. Keep victim under observation, possibility of delayed symptoms.

First-aid measures after inhalation

: Remove victim into fresh air. In case of respiratory problems, consult a doctor/medical service.

First-aid measures after skin contact

: If possible, wipe up/dry remove chemical. Then rinse/shower immediately with (lukewarm) water. If irritation persists, consult a doctor/medical service.

First-aid measures after eye contact

: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a doctor/medical service.

First-aid measures after ingestion

: Rinse mouth with water. Do not wait for symptoms to occur to consult Poison Center.

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4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after skin contact	: Tingling/irritation of the skin. Swelling of the skin. Blisters. ON CONTINUOUS EXPOSURE/CONTACT: Caustic burns/corrosion of the skin. Destruction of tissue.
Symptoms/effects after eye contact	: Corrosion of the eye tissue. Inflammation/damage of the eye tissue. ON CONTINUOUS EXPOSURE/CONTACT: Permanent eye damage.
Symptoms/effects after inhalation	: AFTER INHALATION OF DUST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Dry/sore throat. Coughing. Headache. Nausea. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema. Risk of pneumonia.
Symptoms/effects after ingestion	: Irritation of the oral mucous membranes. Dry/sore throat. Irritation of the gastric/intestinal mucosa. Abdominal pain. Nausea. Vomiting. Diarrhoea

4.3. Immediate medical attention and special treatment, if necessary

If applicable and available it will be listed below.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher, Quick-acting class B foam extinguisher, Quick-acting CO2 extinguisher, water spray if puddle cannot expand.
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5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire	: On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Oxidizes slowly on exposure to air. This reaction is accelerated on exposure to temperature rise and (some) metals.
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5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Gloves. Face shield. Protective clothing. Dust cloud production: self-contained breathing apparatus. Dust cloud production: dust-tight suit. Heat/fire exposure: self-contained breathing apparatus.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Prevent dust cloud formation. No naked flames.
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6.1.2. For emergency responders

Protective equipment	: Gloves. Face shield. Protective clothing. Dust cloud production: self-contained breathing apparatus. Dust cloud production: dust-tight suit. For further information refer to section 8: "Exposure controls/personal protection".
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6.2. Environmental precautions

Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	: Cover spill with inert material, e.g.: sand, earth, vermiculite, kieselguhr, powdered limestone. Stop dust cloud by humidifying. Scoop solid spill into closing containers. Carefully collect the spill/leftovers. Powdered: do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.
Other information	: Dispose of materials or solid residues at an authorized site.

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6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Avoid raising dust. Keep away from naked flames/heat. In finely divided state: use spark-/explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Gas/vapour heavier than air at 20°C. Observe strict hygiene. Remove contaminated clothing immediately. Keep container tightly closed. Do not discharge the waste into the drain.
Hygiene measures	: Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Storage temperature: 20 °C - 38 °C. Meet the legal requirements. Store in a dry area. Store in a dark area. Keep container in a well-ventilated place. Protect against frost. Provide for a tub to collect spills. May be stored under nitrogen. Stored as heated liquid. Max. storage time: 730 day(s).
Incompatible materials	: Heat sources, ignition sources, oxidizing agents, (strong) acids, water/moisture

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

2,2'-iminodiethanol (111-42-2)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Diethanolamine
ACGIH OEL TWA	1 mg/m ³ (IFV - Inhalable fraction and vapor)
Remark (ACGIH)	TLV® Basis: Liver & kidney dam. Notations: Skin; A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans)
Regulatory reference	ACGIH 2023
USA - OSHA - Occupational Exposure Limits	
Local name	Diethanolamine
OSHA PEL TWA	3 ppm (8 hour exposure)
Regulatory reference	OSHA 2023

8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station.
Environmental exposure controls	: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:
Protective gloves
Eye protection:
Safety glasses

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Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

[In case of inadequate ventilation] wear respiratory protection.

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Oily.
Color	: White
Odor	: Ammonia
Odor threshold	: 0.3 ppm
pH	: 11 (5%) @20°C
Melting point	: 27 °C; 80.6°F @1013hPa
Freezing point	: No data available
Boiling point	: 270 °C; 518°F @1013hPa
Critical temperature	: 442 °C; 827.6°F
Critical pressure	: 32416 hPa
Flash point	: 176 °C; 348.8°F @1013hPa
Relative evaporation rate (butyl acetate=1)	: < 0.01
Flammability (solid, gas)	: Not flammable.
Vapor pressure	: < 0.01 hPa @20°C
Relative vapor density at 20°C	: 3.7
Relative density	: 1.095 @24°C
Relative density of saturated gas/air mixture	: 1
Density	: 1095 kg/m³ @24°C
Molecular mass	: 105.16 g/mol
Solubility	: completely soluble. Water: 95.4 g/100ml
Partition coefficient n-octanol/water (Log Pow)	: -2.46 @25°C
Auto-ignition temperature	: 375 °C; 707°F @1013hPa
Decomposition temperature	: 269 °C; 516.2°F
Viscosity, kinematic	: 357.2 mm²/s @30°C
Viscosity, dynamic	: 390.9 mPa·s @30°C
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

Saturation concentration	: < 0.1 g/m³
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SECTION 10: Stability and reactivity

10.1. Reactivity

Temperature above flashpoint: higher fire/explosion hazard. Basic reaction.

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10.2. Chemical stability

Unstable on exposure to light. Hygroscopic. Unstable on exposure to air.

10.3. Possibility of hazardous reactions

Absorbs the atmospheric CO₂. Reacts violently with (strong) oxidizers: heat release resulting in increased fire or explosion risk. Violent exothermic reaction with (some) acids: pressure rise and possible bursting of container. Forms with nitrites carcinogenic nitrosamines. Contact with nitrosating agents under acidic conditions such as nitrous acid, nitrite or nitrogen oxides, can form nitrosamines some of which are potent carcinogens.

10.4. Conditions to avoid

Avoid raising dust. Keep away from naked flames/heat. In finely divided state: use spark-/explosionproof appliances. Finely divided: keep away from ignition sources/sparks.

10.5. Incompatible materials

Oxidizing agents, (strong) acids, water/moisture

10.6. Hazardous decomposition products

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Diethanolamine (111-42-2)	
LD50 oral rat	1600 mg/kg
ATE US (oral)	1600 mg/kg body weight

Skin corrosion/irritation : Causes skin irritation.
pH: 11 (5%) @20°C

2,2'-iminodiethanol (111-42-2)	
pH	11 Source: HSDB

Serious eye damage/irritation : Causes serious eye damage.
pH: 11 (5%) @20°C

Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified.

Diethanolamine (111-42-2)	
NOAEL (chronic,oral,animal/male,2 years)	32 mg/kg body weight
NOAEL (chronic,oral,animal/female,2 years)	64 mg/kg body weight
IARC group	2B - Possibly carcinogenic to humans

** DEA formulated in ethanol showed no oncogenic potential in the rat after unoccluded daily dermal exposure for 2 years. Mechanistic research specifically on DEA indicates that, to the extent DEA can potentially induce tumours in mice, it does so by a mechanism that is not relevant to humans. Therefore, based on the available data, DEA is not considered carcinogenic for humans.

Reproductive toxicity : Suspected of damaging fertility or the unborn child (Inhalation, Dermal, oral).

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Diethanolamine (111-42-2)	
NOAEC (inhalation, rat, 10 days)	0.05 mg/L - Developmental toxicity
NOAEL (dermal, rat, 10 days)	> 1500 mg/kg body weight - Developmental toxicity
NOAEC (inhalation, rat, 10 days)	0.05 mg/L – Maternal toxicity
LOAEL (dermal, rat, 10 days)	150 mg/kg body weight – Maternal toxicity
Reproductive toxicity	Suspected of damaging fertility or the unborn child

STOT-single exposure : Not classified

STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure (Inhalation, Dermal, oral).

2,2'-iminodiethanol (111-42-2)	
LOAEL (dermal, rat/rabbit, 90 days)	32 mg/kg body weight Animal: rat, Guideline: OECD Guideline 411 (Subchronic Dermal Toxicity: 90-Day Study)
NOAEC (inhalation, rat, dust/mist/fume, 90 days)	0.003 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not classified

Viscosity, kinematic : 357.2 mm²/s @30°C

Symptoms/effects after skin contact : Irritation.

Symptoms/effects after eye contact : Serious damage to eyes.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Diethanolamine (111-42-2)	
LC50 - Fish [1]	460 mg/l Test organisms (species): Oncorhynchus mykiss (previous name: Salmo gairdneri)
EC50 - Crustacea [1]	30.1 mg/l Test organisms (species): Ceriodaphnia dubia
EC50 - Crustacea [2]	89.9 mg/l Test organisms (species): Ceriodaphnia dubia
EC50 72h - Algae [1]	9.5 mg/l Source: ECHA
LOEC (chronic)	1.56 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (chronic)	0.78 mg/l Test organisms (species): Daphnia magna Duration: '21 d'

12.2. Persistence and degradability

Diethanolamine (111-42-2)	
Persistence and degradability	Readily biodegradable in water.
Biodegradation	93 % 28 day(s)

12.3. Bioaccumulative potential

Diethanolamine (111-42-2)	
Partition coefficient n-octanol/water (Log Kow)	-2.46 @25°C (Test data)
BCF	2.69 l/kg (QSAR)

Conclusion : Not bioaccumulative

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12.4. Mobility in soil

Diethanolamine (111-42-2)	
Log Koc	0.99
Percent distribution	Fraction air 0%; Fraction sediment 0%; Fraction soil 0%; Fraction water 99.99% (Mackay level I)

Conclusion : Highly mobile in soil

12.5. Other adverse effects

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014).

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

DOT NA No : NA3082
UN-No. (TDG) : Not applicable
UN-No. (IMDG) : Not applicable
UN-No. (IATA) : Not applicable

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Environmentally hazardous substances, liquid, n.o.s.
Proper Shipping Name (TDG) : Not applicable
Proper Shipping Name (IMDG) : Not applicable
Proper Shipping Name (IATA) : Not applicable

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : 9
Hazard labels (DOT) : 9



TDG

Transport hazard class(es) (TDG) : Not applicable

IMDG

Transport hazard class(es) (IMDG) : Not applicable

IATA

Transport hazard class(es) (IATA) : Not applicable

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14.4. Packing group

Packing group (DOT)	: III
Packing group (TDG)	: Not applicable
Packing group (IMDG)	: Not applicable
Packing group (IATA)	: Not applicable

14.5. Environmental hazards

Other information	: No supplementary information available.
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14.6. Special precautions for user

DOT

UN-No.(DOT)	: NA3082
DOT Special Provisions (49 CFR 172.102)	: 8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description "Other regulated substances, liquid or solid, n.o.s.", as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 173 - An appropriate generic entry may be used for this material. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as "Environmentally hazardous substances, solid, n.o.s.," UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 155
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 203
DOT Packaging Bulk (49 CFR 173.xxx)	: 241
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: No Limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: No Limit
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
DOT Reportable Quantity (RQ)	: 100 lbs

TDG

Excepted quantities (TDG)	: E1
Emergency Response Guide (ERG) Number	: 171

IMDG

No data available

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IATA

No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

MARPOL 73/78

: Category Y

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

2,2'-iminodiethanol	CAS-No. 111-42-2	≥ 80%
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2,2'-iminodiethanol (111-42-2)

Listed on EPA Hazardous Air Pollutant (HAPS)

CERCLA RQ	100 lb
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15.2. US State regulations

 **WARNING:** This product can expose you to Diethanolamine, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date : 11/15/2023

Full text of H-phrases	
H302	Harmful if swallowed
H315	Causes skin irritation
H318	Causes serious eye damage
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure

Safety Data Sheet (SDS), USA - Toxyscan

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.