We create chemistry

Safety data sheet

BASF Safety data sheet according to Regulation (EC) No. 1907/2006 as amended from time to time.
Date / Revised: 19.08.2019 Version: 6.0
Date previous version: 06.08.2018 Previous version: 5.0
Product: **Ethylendiamin**

(ID no. 79407/SDS_GEN_EU/EN)
Date of print 11.07.2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Ethylendiamin

Chemical name: ethylenediamine; 1,2-diaminoethane
INDEX-Number: 612-006-00-6
CAS Number: 107-15-3

REACH registration number: 01-2119480383-37-0005, 01-2119480383-37-0006

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

Recommended use: catalyst, polyurethane component

1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Telephone: +49 621 60-0
E-mail address: global.info@basf.com

1.4. Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 [CLP]

Flam. Liq. 3
Acute Tox. 4 (oral)
Acute Tox. 3 (dermal)
Skin Corr./Irrit. 1B
Resp. Sens. 1
Skin Sens. 1B
Eye Dam./Irrit. 1

H226, H311, H334, H317, H314, H302 + H332, H412

According to BASF current knowledge and application of the criteria given in Annex I of Regulation (EC) No. 1272/2008, the following classification exceeding the classification given in Regulation (EC) No 1272/2008, Annex VI, Table 3.1 is required.

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

Globally Harmonized System, EU (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H226	Flammable liquid and vapour.
H311	Toxic in contact with skin.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H314	Causes severe skin burns and eye damage.
H302 + H332	Harmful if swallowed or if inhaled
H412	Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P271	Use only outdoors or in a well-ventilated area.
P260	Do not breathe dust/mist/vapours.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273	Avoid release to the environment.
P243	Take action to prevent static discharges.
P284	In case of inadequate ventilation wear respiratory protection.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P272	Contaminated work clothing should not be allowed out of the workplace.
P264	Wash with plenty of water and soap thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P233	Keep container tightly closed.
P242	Use only non-sparking tools.
P240	Ground and bond container and receiving equipment.

Precautionary Statements (Response):

P310	Immediately call a POISON CENTER or doctor/physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P361 + P364	Take off immediately all contaminated clothing and wash it before reuse.
P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P370 + P378	In case of fire: Use… to extinguish.

Precautionary Statements (Storage):

P405	Store locked up.
P403 + P235	Store in a well-ventilated place. Keep cool.

Precautionary Statements (Disposal):

P501	Dispose of contents/container to hazardous or special waste collection point.

According to Regulation (EC) No 1272/2008 [CLP]

Hazard determining component(s) for labelling: 1,2-Ethanediamine

2.3. Other hazards

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

1,2-Ethanediamine (Content (W/W): 100 %)
CAS Number: 107-15-3
EC-Number: 203-468-6
INDEX-Number: 612-006-00-6

This product contains (a) substance(s) included on the candidate list according to article 59 (1,10) of regulation EC No. 1907/2006 ('REACH') in a concentration equal or above 0.1% w/w:
ethylenediamine
CAS Number: 107-15-3
EC-Number: 203-468-6
INDEX-Number: 612-006-00-6

For the classifications not written out in full in this section, including the hazard classes and the hazard statements, the full text is listed in section 16.

3.2. Mixtures

Not applicable

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

On skin contact:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

On contact with eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Do not induce vomiting. Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms: coughing, dyspnea

4.3. Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Suitable extinguishing media:
water spray, carbon dioxide, foam, dry powder

5.2. Special hazards arising from the substance or mixture

hydrogen cyanide, carbon monoxide, Carbon dioxide, nitrous gases
The substances/groups of substances mentioned can be released in case of fire.

5.3. Advice for fire-fighters

Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:
Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.
Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Avoid contact with the skin, eyes and clothing. Sources of ignition should be kept well clear.

6.2. Environmental precautions

Do not empty into drains. Do not discharge into the subsoil/soil.

6.3. Methods and material for containment and cleaning up

For large amounts: Pump off product.
For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Dispose of contaminated material as prescribed.

6.4. Reference to other sections

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Provide appropriate exhaust ventilation at machinery.

Protection against fire and explosion:
Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy. Vapours are heavier than air. Vapours may form explosive mixture with air.

7.2. Conditions for safe storage, including any incompatibilities

Segregate from oxidants. Segregate from foods and animal feeds. Segregate from acids and acid forming substances.
Further information on storage conditions: Keep container tightly closed and dry; store in a cool place. Keep container in a well-ventilated place. Protect from air.

Storage stability:
Storage temperature: 20 °C

7.3. Specific end use(s)

For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

107-15-3: ethylenediamine

PNEC
freshwater: 0.016 mg/l

marine water: 0.002 mg/l

intermittent release: 0.167 mg/l

sediment (freshwater): 7.68 mg/kg

sediment (marine water): 0.768 mg/kg

soil: 4.36 mg/kg

STP: 0.5 mg/l

oral (secondary poisoning): 4.9 mg/kg

DNEL
worker:
Short-term exposure - systemic effects, dermal: 5 mg/kg

worker:
Short-term exposure - systemic effects, Inhalation: 35 mg/m3

worker:
Long-term exposure- systemic effects, dermal: 3.6 mg/kg

worker:
Long-term exposure- systemic effects, Inhalation: 25 mg/m3

8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Suitable respiratory protection for higher concentrations or long-term effect: Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

Hand protection:
Chemical resistant protective gloves (EN 374)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):
butyl rubber (butyl) - 0.7 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with the skin, eyes and clothing. Do not breathe vapour/spray. When using, do not eat, drink or smoke. Preventive skin protection necessary. Hands and/or face should be washed before breaks and at the end of the shift. At the end of the shift the skin should be cleaned and skin-care agents applied.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	liquid	
Colour:	colourless to yellow	
Odour:	amine-like	
Odour threshold:	not determined	
pH value:	12.2 (100 g/l, 20 °C)	
Melting temperature:	11 °C	
boiling temperature:	116 - 118 °C	
Flash point:	38 °C	(DIN 51755)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	Flammable.	
Lower explosion limit:	For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point.	
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Ignition temperature:	405 °C	(DIN 51794)
Vapour pressure:	70 hPa (50 °C) 12 hPa (20 °C)	
Density:	0.90 g/cm3 (20 °C)	
Relative density:	0.9 (20 °C)	
Relative vapour density (air):	not applicable	
Solubility in water:	miscible, Literature data. 1,000 g/l	
Partitioning coefficient n-octanol/water (log Kow):	-2 - -1.3	(measured)
Self ignition:	Based on its structural properties the product is not classified as self-igniting.	Test type: Spontaneous self-ignition at room-temperature.
Thermal decomposition:	120 °C, 15 kJ/kg, (DSC (DIN 51007)) No decomposition if stored and handled as prescribed/indicated.	
Viscosity, dynamic:	1.6 mPa.s (20 °C)	

9.2. Other information

Self heating ability:	It is not a substance capable of spontaneous heating.	
Miscibility with water:	(20 °C) miscible	
pKA:	7.23 - 7.44 (25 °C) 9.7 - 10.18 (25 °C)	
Adsorption/water - soil:	KOC: 4766; log KOC: 3.68	(OECD Guideline 106)
Surface tension:	Based on chemical structure, surface activity is not to be expected.	
Grain size distribution:	The substance / product is marketed or used in a non solid or granular form.	
Molar mass:	60.10 g/mol	

SECTION 10: Stability and Reactivity

10.1. Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:	No data available.	
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

10.2. Chemical stability
The product is chemically stable.

10.3. Possibility of hazardous reactions
Evolution of explosive gases/vapours. Evolution of heat under influence of acids.

10.4. Conditions to avoid
Avoid heat. Avoid humidity. Avoid contact with air.

10.5. Incompatible materials

Substances to avoid:
Aluminium, zinc, polyvinylchloride, acids, oxidizing agents

10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Harmful in contact with skin and if swallowed. Virtually nontoxic by inhalation.

Experimental/calculated data:
LD50 rat (oral): 866 mg/kg (similar to OECD guideline 401)

LC50 rat (by inhalation): 14.7 mg/l 4 h (similar to OECD guideline 403)
The vapour was tested.

LD50 rat (dermal): approx. 1,000 mg/kg

Irritation

Experimental/calculated data:
Skin corrosion/irritation rabbit: Corrosive. (BASF-Test)

Serious eye damage/irritation rabbit: irreversible damage (BASF-Test)

Respiratory/Skin sensitization

Assessment of sensitization:
May cause sensitization by inhalation and skin contact.

Experimental/calculated data:
Guinea pig maximization test guinea pig: skin sensitizing

Germ cell mutagenicity

Assessment of mutagenicity:
The substance was mutagenic in various test systems with microorganisms and cell cultures; however, these results could not be confirmed in tests with mammals. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Carcinogenicity

No data available.

Reproductive toxicity

Assessment of reproduction toxicity:

The results of animal studies gave no indication of a fertility impairing effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Developmental toxicity

Assessment of teratogenicity:
Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
No substance-specific organtoxicity was observed after repeated administration to animals. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Aspiration hazard

No aspiration hazard expected.

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:
Acutely harmful for aquatic organisms. Depending on local conditions and existing concentrations, disturbances in the biodegradation process of activated sludge are possible.

Toxicity to fish:
LC50 (96 h) 640 mg/l, Poecilia reticulata (Directive 92/69/EEC, C.1, semistatic)
Nominal concentration.

Aquatic invertebrates:
EC50 (48 h) 16.7 mg/l, Daphnia magna (Directive 92/69/EEC, C.2, static)
Nominal concentration.

Aquatic plants:
EC50 (72 h) 645 mg/l (growth rate), Selenastrum capricornutum (Guideline 92/69/EEC, C.3, static)
Nominal concentration.

No observed effect concentration (72 h) approx. 3.2 mg/l (growth rate), Selenastrum capricornutum (Guideline 92/69/EEC, C.3, static)
Nominal concentration.

Microorganisms/Effect on activated sludge:
EC10 (2 h) 0.5 mg/l, nitrifying bacteria
Nominal concentration.

EC50 (17 h) 29 mg/l, Pseudomonas putida (DIN EN ISO 10712)
Nominal concentration. Literature data.

EC20 (60 min) 1,600 mg/l, activated sludge, domestic (OECD Guideline 209)
Nominal concentration. Literature data.

Chronic toxicity to fish:
No observed effect concentration (28 d) > 10 mg/l, Gasterosteus aculeatus (OECD Guideline 210, semistatic)
Nominal concentration.

Chronic toxicity to aquatic invertebrates:
No observed effect concentration (21 d) 0.16 mg/l, Daphnia magna (Daphnia test chronic, semistatic)
Nominal concentration.

Assessment of terrestrial toxicity:
No data available.
Study not necessary due to exposure considerations.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Readily biodegradable (according to OECD criteria).

Elimination information:
95 % BOD of the ThOD (28 d) (Directive 92/69/EEC, C.4-E) (aerobic, activated sludge, domestic, non-adapted)

93 - 95 % BOD of the ThOD (28 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, Inoculum conforming to MITI requirements (OECD 301C))

Assessment of stability in water:
According to structural properties, hydrolysis is not expected/probable.

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:
Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

Bioaccumulation potential:

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected.

12.4. Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will not evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is expected.

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

12.6. Other adverse effects

The substance is not listed in Annex I of Regulation (EC) 2037/2000 on substances that deplete the ozone layer.

12.7. Additional information

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

Other ecotoxicological advice:
Do not allow to enter soil, waterways or waste water channels. Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Incinerate in suitable incineration plant, observing local authority regulations.
The waste codes are manufacturer's recommendations based on the designated use of the product. Other use and special waste disposal treatment on customer's location may require different waste-code assigments.

Waste key:
07 02 08¤ other still bottoms and reaction residues

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

SECTION 14: Transport Information

Land transport

ADR

UN number	UN1604
UN proper shipping name:	ETHYLENEDIAMINE
Transport hazard class(es):	8, 3
Packing group:	II
Environmental hazards:	no
Special precautions for user:	Tunnel code: D/E

RID

UN number	UN1604
UN proper shipping name:	ETHYLENEDIAMINE
Transport hazard class(es):	8, 3
Packing group:	II
Environmental hazards:	no
Special precautions for user:	None known

Inland waterway transport

ADN

UN number	UN1604
UN proper shipping name:	ETHYLENEDIAMINE
Transport hazard class(es):	8, 3
Packing group:	II
Environmental hazards:	no
Special precautions for user:	None known

Transport in inland waterway vessel
Not evaluated

Sea transport

IMDG

UN number:	UN 1604
UN proper shipping name:	ETHYLENEDIAMINE
Transport hazard class(es):	8, 3
Packing group:	II
Environmental hazards:	no

	Marine pollutant: NO
Special precautions for user:	None known

Air transport

IATA/ICAO

UN number:	UN 1604
UN proper shipping name:	ETHYLENEDIAMINE
Transport hazard class(es):	8, 3
Packing group:	II
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

14.1. UN number
See corresponding entries for “UN number” for the respective regulations in the tables above.

14.2. UN proper shipping name
See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

14.5. Environmental hazards
See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

14.6. Special precautions for user
See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

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

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

SECTION 15: Regulatory Information

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

Prohibitions, Restrictions and Authorizations

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
List entry in regulation: P5c

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

15.2. Chemical Safety Assessment

Chemical Safety Assessment not required

SECTION 16: Other Information

Assessment of the hazard classes according to UN GHS criteria (most recent version)

Acute Tox. 4 (oral)
Acute Tox. 3 (dermal)
Skin Corr./Irrit. 1B
Resp. Sens. 1B
Skin Sens. 1B
Flam. Liq. 3
Aquatic Acute 3
Aquatic Chronic 3
Acute Tox. 4 (Inhalation - vapour)
Eye Dam./Irrit. 1

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Flam. Liq.	Flammable liquids
Acute Tox.	Acute toxicity
Skin Corr./Irrit.	Skin corrosion/irritation
Resp. Sens.	Respiratory sensitization
Skin Sens.	Skin sensitization
Eye Dam./Irrit.	Serious eye damage/eye irritation
H226	Flammable liquid and vapour.
H311	Toxic in contact with skin.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H314	Causes severe skin burns and eye damage.
H302 + H332	Harmful if swallowed or if inhaled

H412 Harmful to aquatic life with long lasting effects.

Abbreviations

ADR = The Regulation concerning the International Carriage of Dangerous Goods by Road. **ADN** = The Regulation concerning the International Carriage of Dangerous Goods by inland waterways. **ATE** = Acute Toxicity Estimates. **CAO** = Cargo Aircraft Only. **CAS** = Chemical Abstract Service. **CLP** = Label Classification, Labelling and Packaging Regulation. **DIN** = German national organization for standardization. **DNEL** = Derived No Effect Level. **EC50** = Effective concentration median for 50% of the population. **EC** = European Community. **EN** = European Norm. **IARC** = International Agency for Research on Cancer. **IATA** = International Air Transport Association. **IBC-Code** = Intermediate Bulk Container code. **IMDG** = International Maritime Dangerous Goods Code. **ISO** = International Organization for Standardization. STE = Short time exposure. **LC50** = Lethal concentration median for 50% of the population. **LD50** = Lethal dose median for 50% of the population. **MAK** = Maximum acceptable concentration. **MARPOL** = The International Convention for the Prevention of Pollution from Ships. **NEN** = Dutch Norm. **NOEC** = No Observed Effect Concentration. **OEL** = Occupational Exposure Limit. **OECD** = Organization for Economic Cooperation and Development. **PBT** = Persistent, Bioaccumulative and Toxic. **PNEC** = Predicted No Effect Level. **ppm** = parts per million. **RID** = The Regulation concerning the International Carriage of Dangerous Goods by Rail. **TWA** = Time weight average. **UN-number** = UN number at transport. **vPvB** = very Persistent and very Bioaccumulative.

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.