



SAFETY DATA SHEET

According to (EC) 1907/2006

ETHYLENEDIAMINE 90% (EDA90%)

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1. IDENTIFICATION OF THE SUBSTANCE/ PREPARATION AND OF THE COMPANY UNDERTAKING

1.1 Product identifier

Trade name	Allamine EDA90
Substance name	Ethylenediamine 90%
Registration number	01-2119480383-37-0000
CAS number	107-15-3
EC number	203-468-6
Product code	5405288
Synonyms	Dimethylenediamine 90% 1,2 Diaminoethane 90%

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

Uses advised against	No information
Applications of the substance	Intermediate in manufacture of sequestering agents, fungicides, textile resins and polyamide resins. Metal treatment

1.3 Details of the supplier of the safety data sheet

Supplier: Alliance Chemicals Limited Old Walls, Chapel Lane, Penselwood, BA9 8LY United Kingdom Telephone: +44 (0) 1747841222 Fax: +44 (0) 1747841333 Email: sj@alliancechemicals.com

1.4 Emergency telephone number

+44 (0) 1747841222 or +44 (0) 7802567401
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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (regulation (EC) No 1272/2008)	Flammable Liquids, Category 3, H226 Acute Toxicity, category 4, H302 Acute Toxicity, category 4, H332 Acute Toxicity, category 3, H311 Skin Corrosion, category 1B, H314 Respiratory Sensitisation, category 1B, H334 Skin Sensitisation, category 1B, H317 Chronic aquatic toxicity, category 3, H412
Classification (67/548/EEC, 1999/45/EC) Hazard category:	Flammable, R10 Corrosive, C, R34 Harmful, Xn, R42/43 Sensitising, Xn, R42/43
Risk advice to man and the environment	Flammable. Causes burns. Harmful in contact with skin and if swallowed. May cause sensitisation by inhalation and skin contact.

For a full text of H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Label (regulation (EC) 1272/2008):	
Pictogram	
Signal word	Danger
Hazard statements	H226 Flammable liquid and vapour. H302 + H332 Harmful if swallowed. H311 Toxic in contact with skin. H314 Causes severe burns and eye damage. H317 May cause an allergic skin reaction. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H412 harmful to aquatic life with long lasting effects.

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<p>Precautionary statements</p>	<p>Prevention: P210 Keep away from heat/ sparks/ open flames/ hot surfaces – No smoking. P261 Avoid breathing dust/ fumes/ gas/ mist/ vapour/ spray. P280 Wear protective gloves/ protective clothing/ face protection/ eye protection. P285 In case of inadequate ventilation wear respiratory protection.</p> <p>Response: P303 + P361 + P353 IF ON SKIN (or hair): Remove/ take off immediately all contaminated clothing. Rinse skin with water/ shower P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P342 + P 311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/ physician. P403 + P235 Store in well ventilated place. Keep cool.</p>
<p>Hazardous components which must be listed on the label:</p>	<p>Ethylenediamine 90% 107-15-3</p>

2.3 Other hazards

<p>No further data available</p>	
<p>PBT and vPvB assessment:</p>	<p>This substance/ mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.</p>

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3. COMPOSITION/ INFORMATION ON INGREDIENTS**3.1 Substances**

Hazardous Substance					
Chemical Name	PBT vPvB -OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Classification (67/548/EEC)	Conc %
Ethylenediamine		107-15-3 203-468-6 01- 2119480383 -37-0000	Flam.Liq.3; H226 Acute Tox. 4; H302 Acute Tox. 4; H3132 Acute Tox. 3; H311 Skin Corr. 1B; H314 Resp. Sens. 1; H334 Skin Sens. 1; H317	R10 C; 34 Xn; R20/R21/22 Sens: R42/43	90
Non Hazardous Substance:					
Water		7732-18-5 231-791-2			10

For the full text of H-Statements mentioned in this Section, see Section 16.

For the full text of R-Phrases mentioned in this Section, see Section 16.

**REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59)
Not applicable.**

4. FIRST AID MEASURES**4.1 Description of first aid measures**

General Advice	Immediately seek medical attention. Move out of dangerous area. Show this safety data sheet to the doctor in attendance.
If inhaled	Remove to fresh air immediately. If not breathing give artificial respiration. Consult physician after significant exposure.
In case of skin contact	Remove contaminated clothes and shoes. Immediately flush with water for at least 15 minutes. Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty. Take immediately to hospital.
In case of eye contact	Immediately rinse with water for at least 15 minutes holding the eyelids apart. Get medical attention. Remove contact lenses. Protect unharmed eye. Small amounts splashed into eye can cause irreversible tissue damage and blindness.
If swallowed	Wash mouth out with water and then drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. DO NOT induce vomiting! May cause chemical burns in mouth and throat.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms:	The symptoms and effects are expected from the hazards as shown in Section 2. No specific product related symptoms are known.
Risks:	Harmful if swallowed or inhaled. Toxic in contact with skin. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes severe burns.

4.3 Indication of any immediate medical and special treatment needed

Symptomatic treatment. If in doubt get medical attention immediately

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5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents	Carbon dioxide (CO ₂), water spray, alcohol-resistant foam, dry chemical powder.
For safety reasons unsuitable extinguishing agents:	No information available.

5.2 Special hazards arising from the substance or mixture

Special hazards during firefighting/ Specific hazards arising from the chemical	Water spray may be ineffective unless used by experienced firefighters. Do not allow run-off from firefighting to enter drains of water courses.
Combustion products	Carbon oxides. Nitrogen oxides (NO _x).

5.3 Advice for firefighters

Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit/ eye protection.
Additional information	Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire cans should be stored separately in closed containments.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation.
Wear protective clothing.
Use respiratory protective device against the effects of fumes/dust/aerosol.
Remove all incompatible materials and sources of ignition.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions

Do not allow the product to penetrate the ground/soil.
Do not allow the product to reach any water course/ sewage systems.
If the product contaminates water courses/ sewage systems inform the respective authorities.

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6.3 Methods for cleaning up/ Methods for containment

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local/national regulations.

6.4 Reference to other sections

For personal protection see section 8.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Advise on safe handling:

For personal protection see Section 8.
Do not breath vapours or spray mist.
Avoid contact with skin and eyes.
Persons with a history of skin sensitisation problems, or asthma, allergies, chronic of recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Smoking, eating or drinking should be prohibited in the application area.
Provide sufficient air exchange and/ or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion:

Avoid formation of aerosol.
Keep away from sources of ignition – No Smoking.
Take measures to prevent build-up of electrostatic charge.
No sparking tools should be used.

7.2 Conditions for safe storage including any incompatibilities

Requirements for storage areas and containers:	No Smoking. Keep contained tightly closed in a dry and well ventilated place. Reacts with copper, aluminium, zinc and their alloys. Electrical installations/ working materials must comply with the technological safety standards.
Information about storage in one common storage facility:	Store away from feedstuffs or foodstuffs Avoid incompatible materials and conditions
Other data:	No decomposition if stored and applied as directed.

7.3 Specific end use(s)

No special requirement

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION**8.1 Control parameters**

Hazardous ingredients: 1,2-DIAMINOETHANE

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

DNEL (Derived No Effect Level)/ PNEC (Predicted No Effect Concentration) values according to Regulation (EC) No. 1907/2006

Type	Exposure	Value	Population	Effect
DNEL	Dermal	10 g/l	Workers	Acute local
DNEL	Dermal	3.6 mg/Kg bw/day	Workers	Long-term systemic
DNEL	Inhalation	25 mg/ m3	Workers	Long-term systemic
PNEC	Fresh water	0.016 mg/l	-	-
PNEC	Marine water	0.002 mg/l	-	-
PNEC	Fresh water sediment	7.68 mg/ Kg dry weight	-	-
PNEC	Marine sediment	0.768 mg/ Kg dry weight	-	-
PNEC	Soil	4.36 mg/ Kg dry weight	-	-
PNEC	Sewage treatment plant	0.5 mg/l	-	-

8.2 Exposure controls

Engineering controls	Effective exhaust ventilation system. Ensure that eyewash stations and safety showers are close to the workstation location.
Personal Protective equipment	
Respiratory protection:	In case of vapour formation use a respirator with an approved filter. Gas/ vapour filter, type K: ammonia and derivatives (EN141)
Hand protection:	Butyl-rubber gloves.
Eye protection:	Tight fitting safety goggles. Face-shield
Skin and body protection:	Protective suit
Hygiene measures:	Avoid contact with skin, eyes and clothing. When using do not eat, drink or smoke. Wash hands before break and end of work day. Wash contaminated clothing before re-use
Environmental exposure controls	
General advice	Prevent product from entering drains and waterways. If contamination occurs inform respective authorities.

9. PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on basic physical and chemical properties**

Appearance:	Form: Colour: Odour: Odour threshold:	Liquid Colourless to light yellow Ammonical No data available
Safety data:	pH - Melting point - Boiling point - Flash point - Ignition temperature – Evaporation rate – Flammability - Lower explosion limit – Upper explosion limit - Vapour pressure - Relative vapour pressure – Relative density – Water solubility – Solubility in other solvents – Partition coefficient – Auto ignition temperature – Decomposition temperature- Viscosity – Explosive properties – Oxidizing properties –	12.8 @ 25% solution (20°C). 2°C 117°C 50°C (tag closed cup). Not determined. Not determined. Flammable. 4.2 vol. % 14.4 vol. % 13.8 hPa @ 20°C 2.1 (air = 1). 0.910 @ 20°C Miscible in all proportions (20°C). Miscible with ethanol, acetone and ether. Not determined. 406°C Not determined. 1.7 mPa.s @ 20°C Not explosive. Not classified as oxidizing.
This safety data only contains information relating to safety and does not replace any product information or product specification		

9.2 Other information

No further relevant information is available.

10. STABILITY AND REACTIVITY**10.1 Reactivity**

Stable under normal conditions.

10.2 Chemical stability

Stable under recommended storage conditions (see Section 7). Stable under normal temperatures and pressures.

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10.3 Possibility of hazardous reactions

Heating can release hazardous gases.

10.4 Conditions to avoid

Conditions to avoid:	Heat, flames and sparks. Avoid contact with strong oxidizers. Fire or intense heat may cause violent rupture of package.
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10.5 Incompatible materials

Materials to avoid:	Reacts strongly with concentrated acids and chlorohydrocarbons. Attacks copper and copper alloys. Reacts strongly with oxidizers.
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10.6 Hazardous decomposition products

Hazardous decomposition products:	Hazardous decomposition will produce carbon monoxide and/or carbon dioxide. Nitrogen oxides (NOx).
Thermal decomposition:	No data available.

11. TOXICOLOGICAL INFORMATION

Product Information:

Hazard Summary	
Inhalation:	Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Inhalation of aerosols may cause irritation to mucous membranes.
Skin:	Symptoms may be delayed. Toxic in contact with skin. May cause an allergic skin reaction. Causes severe skin burns.
Eyes:	Causes serious eye damage.
Ingestion:	Harmful if swallowed. Corrosive to the digestive tract. Causes burns.

Toxicological Assessment

Further information: Solvents may degrease the skin.

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11.1 Information on toxicological effects

Toxicological data for the components:

Test result ethylenediamine	
Acute oral toxicity:	LD50: > 300-2,000 mg/ Kg (rat).
Acute inhalation toxicity:	LD50: > 10-20 mg/l (rat). Exposure time 4h. Test atmosphere: vapour.
Acute dermal toxicity:	LD50: > 200-1000 mg/ Kg (rabbit).
Skin irritation:	Result: Causes burns.
Sensitisation:	Result: The product is a skin sensitiser, sub-category 1B. Result: The product is a respiratory sensitiser, sub-category 1B.
Germ cell mutagenicity	
Genotoxicity in vitro:	Result: No evidence of genotoxic effects in vitro.
Genotoxicity in vivo:	Result: No evidence of genotoxic effect in vivo.

12. ECOLOGICAL INFORMATION

Product Information:

Ecotoxicology Assessment	
Additional ecological information:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

12.1 Toxicity

Ecotoxicology Assessment			
Product/ ingredient name	Result	Species	Exposure
Ethylenediamine	EC50: 3.2 g/l.	Micro-organism	2 hours
	NOEC: 0.5 g/l.	Micro-organism	2 hours
	Acute EC50: 645 mg/l Fresh water.	Algae	72 hours
	Acute EC50: 16.7 mg/l Fresh water.	Daphnia	48 hours
	Acute LC50: 640 mg/l fresh water.	Fish	96 hours
	Acute NOEC: 3.2 mg/l Fresh water.	Algae	72 hours
	Chronic NOEC: 0.16 mg/l Fresh water	Daphnia	21 days
	Chronic NOEC: 10 mg/l Fresh water	Fish	28 days

Conclusions/ Summary: PNEC Intermittent release = 0.167 mg/l (ethylenediamine)

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12.2 Persistence and degradability

Ethylenediamine	
Biodegradability:	Result: Readily biodegradable. >60% BOD, 28 days, Closed Bottle Test (OECD 301D).

12.3 Bioaccumulative potential

Ethylenediamine	
Bioaccumulation:	Not expected considering the low log Pow value.

12.4 Mobility in soil

Ethylenediamine	
Mobility:	The product is miscible in water and readily biodegradable in both water and soil. Accumulation is not expected. Groundwater contamination is unlikely.

12.5 Results of PBT and vPvB assessment

Ethylenediamine	
PBT and VPvB assessment:	This substance is not considered to be PBT (Persistent, Bioaccumulative, Toxic) This substance is not considered to be vPvB (very Persistent nor very Bioaccumulative)

12.6 Other adverse effects

Ethylenediamine	
Biochemical Oxygen Demand (BOD):	No data available

<p>Harmful to fauna. Do not allow to enter watercourses or soils. Large doses cause high/ low pH which may affect effluent and sewage treatment processes. Discharge of large quantities may kill fish and other aquatic life due to increase/ decrease in ph. Harmful to aquatic organisms. Spillage in sewers or waterways must be avoided.</p>

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13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product	This product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Hazardous waste
Contaminated packaging:	Contaminated packaging must not be treated as household waste. Dispose of in accordance with regional or national regulations. Do not burn, or use a cutting torch, on the empty packaging.

14. TRANSPORT INFORMATION

14.1 UN Number	
ADR:	1604
RID:	1604
IMDG-Code:	1604
IATA-DGR:	1604
14.2 Proper Shipping Name	
ADR:	ETHYLENEDIAMINE.
RID:	ETHYLENEDIAMINE.
IMDG-Code:	ETHYLENEDIAMINE.
IATA-DGR:	Ethylenediamine.
14.3 Transport Hazard Class	
ADR:	8 (3)
RID:	8 (3)
IMDG-Code:	8 (3)
IATA-DGR:	8 (3)
14.4 Packing Group	
ADR:	
Packaging Group:	11
Classification Code:	CF1
Hazard Identification No:	83
Labels:	8 (3)
Tunnel Restriction Code:	Full load, Tank-container, (D/E).
RID:	
Packaging Group:	11
Classification Code:	CF1
Hazard Identification No:	83
Labels:	8 (3)
IMDG-Code:	
Packaging Group:	11
Labels:	8 (3)
EmS Code:	F-E, S-C
IATA:	
Packing Instruction (Cargo Aircraft):	855
Packaging Group:	11
Labels:	8 (3)

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14.5 Environmental Hazards	
ADR:	
Environmentally Hazardous:	No.
RID:	
Environmentally Hazardous:	No.
IMDG-Code:	
Marine Pollutant:	No.
IATA-DGR:	
Environmentally Hazardous:	No.

14.6 Special precautions for user:

Not applicable.

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

Not applicable for product as supplied.

15. REGULATORY INFORMATION

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

Ethylenediamine	
Major Accident Hazard Legislation:	ZEU SEVES3 FLAMMABLE LIQUIDS P5c Quantity 1: 5,000 t. Quantity 2: 50,000 t.
Water Contaminating Class (Germany):	WGK 2 water endangering.
REACH – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)	
EU REACH – Annex XVII:	Banned and/or restricted: • Ethylendiamine
Notification Status:	
CH INV:	YES. On the inventory, or in compliance with the inventory.
TSCA:	YES. All chemical substances in this product are either listed on the TSCA inventory or in compliance with a TSCA inventory exemption.
DSL:	YES. The ethylenediamine component of this product is on the Canadian DSL list.
AICS:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.
NZIoC:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.
ENCS:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.

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ISHL:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.
KECI:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.
PICCS:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.
IECSC:	YES. Ethylenediamine is on the inventory, or in compliance with the inventory.
Further Information:	
This product is to be considered a substance according to EU-legislation.	
Chemical Safety Assessment:	
Ethylenediamine:	A chemical safety assessment has been carried out for this substance.

16. OTHER INFORMATION

Full Text Of H-Statements Referred To Under Sections 2 And 3	
H226:	Flammable liquid and vapour.
H302:	Harmful if swallowed.
H311:	Toxic in contact with skin.
H314:	Causes severe burns and eye damage.
H317:	May cause an allergic skin reaction.
H318:	Causes serious eye damage.
H332:	Harmful if inhaled.
H334:	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Full Text Of R-Phrases Referred To Under Sections 2 And 3	
R10:	Flammable.
R20/21/22:	Harmful by inhalation, in contact with skin, or if swallowed.
R34:	Causes burns.
R42/43:	May cause sensitisation by inhalation and skin contact.
Explanation For Possible Abbreviations Mentioned In Section 2	
PBT:	Persistent, bioaccumulative and toxic.
vPvB:	Very persistent and very bioaccumulative.
OEL:	Occupational exposure limit.

For the full exposure scenario see Appendix attached to the Akzo Nobel Safety Data Sheet for Ethylenediamine (EDA).

Revision date: 20/09/2016 Version: 7 Author: Steven Johnston

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