



Producer:  
"AGRIA" S.A  
4009 Plovdiv, Bulgaria  
**Safety Data Sheet according to REGULATION (EC) No 1907/2006**

Issue date: 01/07/2008  
Edition: 3 Date of edition: 01.12.2010  
Number of pages: 11

# SAFETY DATA SHEET

## ZINEB 80%

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

**1.1. PRODUCT IDENTIFIERS:** **Chemical name:** Zineb (ISO);  
zinc ethylenebis (dithiocarbamate) (polymeric)  
**CLP Index No.:** 006-078-00-2

**1.2. RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST:** Active substance for inclusion in biocidal products.

**1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET:** AGRIA S.A.

**ADDRESS:** Asenovgradsko shose, 4009 Plovdiv

**PHONE:** + 359 32 273 500  
the phone number is available only during office hours.

**FAX:** + 359 32 638 377

**E-MAIL:** agria@agria.bg

**1.4 EMERGENCY PHONE:** Toxicological clinic at Emergency Medicine Hospital "N.I.Pirogov",  
phone:+359 2 915 44 09, available 24 hours.

### 2. HAZARDS IDENTIFICATION

#### 2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Regulation (EC) No. 1272/2008 Annex VI Table 3.1

Hazard Class/es and Category/ies	Hazard statements
Specific target organ toxicity — single	



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exposure. Hazard category 3 (STOT SE 3)	<b>H335</b> - May cause respiratory irritation.
Respiratory/skin sensitization. Hazard category 1 (Skin Sens. 1)	<b>H317</b> - May cause an allergic skin reaction.
<b>Directive 67/548/EEC Annex I</b>	
<b>Category of danger</b>	<b>Risk phrases</b>
<b>Irritant (Xi)</b>	<b>R 37 – Irritating to respiratory system.</b> <b>R 43 - May cause sensitization by skin contact.</b>

## 2.2 LABEL ELEMENTS

Hazard pictograms:

Xi



**Irritant**

**R - phrases:**

**R 37** – Irritating to respiratory system.

**R 43** - May cause sensitization by skin contact.

**S –phrases:**

**S2** - Keep out of the reach of children

**S8** - Keep container dry

**S24/25** - Avoid contact with skin and eyes.

**S46** - If swallowed, seek medical advice immediately and show this container or label

To avoid risks to man and the environment, comply with the instructions for use.

## 2.3 OTHER HAZARDS

Not known

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 SUBSTANCES

**Chemical name:**

Zineb (ISO); zinc ethylenebis (dithiocarbamate) (polymeric), min.80%

**Other identifiers:**

CAS No. 12122-67-7

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EC No. 235-180-1

CLP Index No. 006-078-00-2

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

**In case of uncontrolled exposure immediate medical attention is recommended.**

**IF INHALED**

Remove from exposure area to fresh air.  
Provide artificial breathing if the breathing has stopped  
Seek medical attention immediately.

**IF SWALLOWED:**

Seek medical attention immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

**IF ON SKIN OR CLOTHING:**

Remove contaminated clothing and shoes.  
Wash affected area with plenty of water and soap immediately. Seek medical attention if necessary.

**IF IN EYES:**

Hold eyes open and rinse with large quantity of water for at least 15 minutes. Remove contact lenses and rinse eyes again.  
Seek medical advice.

**ADVICE TO DOCTOR:** No specific antidote available. Treat symptomatically.

**SYMPTOMS OF POISONING:**

Poisoning when swallowed or inhaled is accompanied by headache, dizziness, ataxia, extreme weakness.

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

Possible manifestation of allergic symptoms such as urticaria, allergic edema. Possible changes in catarrhal mucous membrane of eyes and upper respiratory tract.

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

No specific antidote available. Treat symptomatically.

## 5. FIRE FIGHTING MEASURES

### 5.1. EXTINGUISHING MEDIA:

**Suitable extinguishing media:**

dry powder, carbon dioxide fire extinguishers. In case of large fires use water spray, foam extinguisher.

**Unsuitable extinguishing media:**

water jet

### 5.2. SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

In case of fire, along with other products of combustion, the smoke contains toxic gases – sulphur dioxide,



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### 5.3. ADVICE FOR FIREFIGHTERS:

nitrogen oxides, carbon monoxide, hydrogen sulphide.  
Full impervious coverall clothing. Self-containing  
breathing apparatus.

## 6. ACCIDENTAL RELEASE MEASURES

<b>6.2. PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES</b>	Keep unnecessary personnel away. Eliminate all ignition sources (flame or spark). Provide local and general exhaust ventilation. Use protective clothing and gloves, respiratory mask with an effective particulate filter, chemical goggles for eye protection.
<b>6.2. ENVIRONMENTAL PRECAUTIONS</b>	In case of accidental release take precautions to protect the surface and underground water, soil and sewage from contamination. Remove the sources of heat and flames. In case of spill into the sewage, surface water, ground water or soil notify the competent authorities immediately.
<b>6.3. METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP</b>	Absorb with an inert material – sand, zeolite. Use vacuum cleaning. Do not dispose the product and/or contaminated materials into the sewage systems, water sources or water bodies. Collect into an appropriate, labelled tightly sealed waste container. Store the container at an appropriate place for further treatment or disposal according to the national legislation.
<b>6.4. REFERENCE TO OTHER SECTIONS</b>	The collected product and/or contaminated materials should be treated as a waste according to section 13.

## 7. HANDLING AND STORAGE

### 7.1. PRECAUTIONS FOR SAFE HANDLING

#### **Technical and organizational measures recommendations**

Use process enclosures, local exhaust ventilation and other suitable  
engineering controls to keep airborne levels below recommended  
exposure limits.

If user operations generate dust, fume or mist, use ventilation to keep  
exposure to airborne contaminants below the exposure limit. (see section  
8).

Regularly clean the premises and facilities wearing personal protective  
equipment and using professional fire-safe cleaning tools. Keep within the  
workspace only the quantities necessary for the normal working process.



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**Advice on general occupational hygiene**

**7.2. CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES**

**7.3. SPECIFIC END USE(S)**

Containers / packaging must not be left open.

Dust may form explosive mixtures with air. All the areas where accumulation of dust in dangerously high concentrations may occur have to be indicated and provided with fire extinguishing systems/tools.

Keep away from sources of ignition (open flames, sparkles).

Do not eat, drink or smoke when handling the product.

In case of contamination change the work clothing.

Avoid inhalation, ingestion and contact with eyes and skin.

Do not handle this product without wearing the recommended personal protective clothing and equipment.

Keep in unopened original packing.

Keep in cool, dry, well-ventilated place far from sources of ignition.

Prevent static electricity generation.

Do not allow accumulation of dust in significant concentrations

Keep out of reach of children

Keep away from:

- medicinal products, food, forage, fertilizers and seed
- hazardous infectious substances, radioactive substances, explosive substances
- highly reactive oxidizing substances

See point 1.2 and the label/leaflet for relevant uses of this product.

## **8. EXPOSURE CONTROL/PERSONAL PROTECTION**

### **8.1. CONTROL PARAMETERS**

**Occupational exposure limit values in air according to national (Bulgarian) legislation**

Name	CAS No./ EC No.	Occupational exposure limit values in air for the chemical substances	Legal basis
Zineb (ISO); zinc ethylenebis (dithiocarbamate) (polymeric)	CAS № 12122-67-7 EC № 235-180-1	8 h - 1 mg/m <sup>3</sup>	Ordinance No. 13 on the protection of workers from risks related to exposure to chemical agents at work (Government Gazette, No. 8/2004 amended No.67/2007)

Consult the relevant national limit values currently applicable in the EU Member State/Non EU country in which this safety data sheet is being provided.



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## Occupational exposure limit values in air according to EU legislation

None established

### 8.2. EXPOSURE CONTROLS

#### 8.2.1. Appropriate engineering controls

Ensure adequate local and overall ventilation in the workplace.

#### 8.2.2. Individual protection measures, such as personal protective equipment

##### - respiratory protection

In case of dust or aerosol formation use respirator with an approved filter. Half mask with a particle filter FFP2 (EN149).

##### - hand protection

**In case of short term exposure:**

single-use vinyl gloves.

**In case of prolonged or frequently repeated exposure**

nitrile-rubber gloves with a protection class of 5 or higher  
breakthrough time > 240 minutes  
thickness > 0.4 mm.

##### - eye protection

Use safety glasses with side shields (according to EN 166).

##### - skin protection

**In case of prolonged and repeated exposure**

wear body-covering chemical resistant protective clothing.

##### - hygienic measures

Hands and face should be washed before breaks and at the end of shift. Do not eat, drink or smoke while working. Wash contaminated clothes before reuse.

Immediately change contaminated clothing.

#### 8.2.3. Environmental exposure controls

#### Technical precautions

Emissions from the ventilation system and working equipment should be checked for conformity with environment safety legislations.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	fine powder
Physical State:	solid/ powder
Color:	off-white
Odour:	odorless
Flash point	not applicable
pH:	6.0- 7.5
Relative density	0.779 ± 0.0005 (20° C)



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Melting point	Decomposes with a change in color – cream to yellow – at 158° C without melting
Boiling point/boiling range	not applicable
Surface tension	80.53 ± 0.12 mN/m (20° C)
Vapour pressure	Log P vs. 1/T 7.94 mPa (25° C)
Vapour density	Not applicable
Viscosity	Not applicable
Evaporation velocity	Not applicable
Flammability	Not highly flammable
Danger of explosion	The product is not explosive, but dust mixed with air could be explosive in the presence of ignition source
Auto-ignition temperature	340° C (with a blue flame)
Oxidizing properties	The test substance is considered to have oxidizing properties.
Solubility in water	0.010g/l at 30°C
Solubility in organic solvents	Practically insoluble in common organic solvents. Soluble in pyridine, chloroform, dimethyl sulfoxide and carbon disulfide.
Partition coefficient (n-octanol/water)	The mean partition coefficient LogP <sub>ow</sub> is 1.30

## 9.2 OTHER INFORMATION

Not known

## 10. STABILITY AND REACTIVITY

- |   |  |
|---|--|
| <b>10.1. Reactivity</b>                         | No hazardous reactions when stored and handled according to instructions.  |
| <b>10.2. Chemical stability</b>                 | Stable under normal conditions.  |
| <b>10.3. Possibility of hazardous reactions</b> | Not known  |
| <b>10.4. Conditions to avoid</b>                | Avoid storage at temperature > 35 °C in a confined place.<br>Slow decomposition in presence of heat and moisture.<br>Prevent heating of the material to avoid thermal decomposition. |



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**10.5. Incompatible materials**

Avoid contact with strong oxidants and strong acids and basis.  
Decomposes under alkaline and acidic conditions.

**10.6. Hazardous decomposition products**

See section 5.

## 11. TOXICOLOGIC INFORMATION

### TOXICOKINETICS, METABOLISM AND DISTRIBUTION

**DISTRIBUTION:**

Target organs - liver and kidneys.

**POTENTIAL FOR ACCUMULATION:**

No accumulation appears to take place in any tissue.

**TOXICOLOGICALLY SIGNIFICANT COMPOUNDS:**

Parent compound and metabolite Ethylenethiourea (ETU)

**METABOLISM IN ANIMALS:**

Extensively metabolized by reactions of hydrolysis, conjugation and ring formation to Ethylenethiourea (ETU).

### ACUTE EFFECTS

**Acute toxicity**

Rat LD<sub>50</sub> oral:

> 2000 mg/kg bw.

Rat LD<sub>50</sub> dermal:

> 2000 mg/kg bw.

Rat LC<sub>50</sub> inhalation:

> 20µl/L air (4h)

**Irritation and corrosivity**

Skin irritation (rabbit):

Not irritant.

Eye irritation (rabbit):

Mild irritant. Irritation fully reversible within 48 hours.

**SENSITIZATION**

Skin sensitization (guinea pig):

Sensitiser (grade I = weak skin sensitizer)

**REPEATED DOSE TOXICITY**

**Oral route (rats), 90 days**

LOAEL 10000 ppm, based on the histological changes in the thyroid

NOAEL 1000 ppm, based on the reversibility of the thyroid lesions in the high dose recovery group animals.

### CMR EFFECTS

**Carcinogenicity**

No carcinogenic potential in laboratory animals.

NOEL (mouse): 12.52 - 17.81mg/kg bw/day.

**Mutagenicity**

No genotoxic potential either in *in-vitro* or *in-vivo* at dose levels of 10000 mg/kg bw

**Toxicity for reproduction**

**Teratogenicity**

No teratogenic potential in laboratory animals

NOEL (rats): 60.0mg/kg bw/day for embryo/fetotoxic effects



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**Fertility**

NOEL (rats): 60.0mg/kg bw/day for maternal toxicity  
No reproductive effects  
NOEL (rats): 70.0 mg/kg bw/day for reproductive effects  
NOEL (rats): 7.0mg/kg bw/day for parental toxicity

**ADDITIONAL TOXICOLOGICAL INFORMATION**

One of the metabolites of Zineb is ethylenethiourea (ETU). ETU is significantly toxic and potentially mutagenic.

**12. ECOLOGICAL INFORMATION**

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**12.1. ECOTOXICITY**

**Toxicity for aquatic organism**

Fish (*Oncorhynchus mykiss*) - Acute 96 hour  $LC_{50}$  ( $mg\ l^{-1}$ ): 20.8

Aquatic invertebrates (*Daphnia magna*) - Acute 48 hour  $EC_{50}$  ( $mg\ l^{-1}$ ): 40

**Toxicity for birds**

Non toxic to birds

**Toxicity for bees**

Non toxic to bees.

**Toxicity for soil micro-organisms**

LOEL (4 weeks, *Nitrosomonas Nitrobacter.*) >10 mg/kg soil

**12.2. MOBILITY**

Zineb adsorbs strongly to soil particles and usually does not move below the upper layer of soil.

**12.3. PERSISTENCE AND DEGRADABILITY**

**In soil:** Zineb is subject to chemical breakdown (hydrolysis) and does not persist in soil. Its bioactive half-life in field is 16 days. Within 4 months after a field planted with alfalfa was sprayed 99.7% of the applied Zineb was lost.

**In water:** Zineb is practically insoluble in water. It is unstable in water and hydrolyses rapidly, producing ethylenediamine, ethylenethiourea and other degradation products.

**In plants:** Zineb metabolizes to ethylenethiourea, ethylenethiuram monosulphide, ethylenesothiocyanate, ethylenethiuram disulphide, ethylenediamine and carbon disulphide. These products are more active and more toxic than Zineb itself.

**12.4. BIOACCUMULATIVE POTENTIAL**

Bioconcentration factor: 2.1 (calc.)

**12.5. RESULTS OF PBT ASSESSMENT**

The product does not contain any PBT or vPvB substance



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**12.6. OTHER ADVERSE EFFECTS** not known

## **13.DISPOSAL CONSIDERATION**

### **13.1. Waste treatment methods**

**Disposal must be carried out** in accordance with the provisions of the national legislation, in an environmentally safe manner.

**Recommended treatment method:** burning in appropriately licensed incinerators.

**Collection of small product quantities:**

Store in solid waste containers.

The container should be clearly labelled, with content description, hazard pictograms, signal words, hazard and precautionary statements. Store in well ventilated areas, until deposit to a licensed waste disposal company. The water used for contaminated surface washing should be collected for further treatment.

### **Washing products**

Do not reuse the empty containers for any other purpose.

Do not dispose into the sewage. Do not pollute natural water sources.

### **Waste code:**

07 04 13\* solid waste, containing dangerous substances  
07 04 01\* aqueous washing liquid and mother liquors

### **Waste code, packaging:**

15 01 10\* packaging containing residues of or contaminated by dangerous substances

## **14. TRANSPORT INFORMATION**

Not classified as dangerous in the meaning of transport regulations.

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR):  
not regulated

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID):  
not regulated

European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (AND):  
not regulated

International Maritime Dangerous Goods (IMDG Code) (sea):  
not regulated

Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO-TI):  
not regulated

## **15. REGULATORY INFORMATION**



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## **15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE**

### **EU Legislation:**

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

**Applicable**

Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market

**Applicable**

Commission Regulation (EC) No 1451/2007 of 4 December 2007 on the second phase of the 10-year work programme concerning the placing of biocidal products on the market

**Applicable**

Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work.

**Applicable**

Annex VIII of Regulation (EC) No.1907/2006.

**No restrictions**

## **15.2 CHEMICAL SAFETY ASSESSMENT**

The chemical safety assessment has been carried out for the substance

## **16. OTHER INFORMATION**

### **Revision Indication:**

Information in this MSDS has been revised in the following section(s):

2 – Hazards identification; 13 – Disposal consideration

All sections revised for new MSDS format (Regulation 453/2010/EC).

Information in this MSDS is based on our present knowledge concerning the product, at the edition date. This MSDS completes technical use sheets but does not replace them.