

**EC-SAFETY DATA SHEET**  
**ACCORDING TO DIRECTIVES 1907/2006/EEC**

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

**1.1. Product identifier**

Degesch Magtoxin

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

Plant protection product

**1.3. Details of the supplier of the safety data sheet**

Detia Degesch GmbH  
Dr.-Werner-Freyberg-Str. 11  
D-69514 Laudenbach  
Germany

Telephone number: + 49/6201/708-(0)-503  
Faxnumber: + 49/6201/708-427  
E-Mail: [Sicherheitsdatenblaetter@detia-degesch.de](mailto:Sicherheitsdatenblaetter@detia-degesch.de)

**1.4. Emergency telephone number**

+ 49/6201/708-(0)- 503

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**2: Hazards identification**

**2.1. Classification of the substance or mixture**

GHS02, GHS06, GHS09



**Signal Word:**

Danger

**Hazard statement:**

H260- In contact with water releases flammable gases which may ignite spontaneously.

H300- Fatal if swallowed..

H311- Toxic in contact with skin.

H319- Causes serious eye irritation.

H400- Very toxic to aquatic life.

EUH029- Contact with water liberates toxic gas.

EUH032- Contact with acids liberates very toxic gas

**Precautionary statements:**

P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.

P232: Protect from moisture.

P234: Keep only in original container.

P273: Avoid release to the environment.

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

P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P321: Specific treatment: in case of the possibility of a poisoning, causing an irritation of the lungs, beclomethasone sprays (e. g. Ventolair 100) or an adequate product for the prevention of swelling of the respiratory ducts and accumulation of fluid in the lungs (pulmonary edema) should be administered.

P335: Brush off loose particles from skin.

P370+P378: In case of fire: Use dry sand or powder and than with CO<sub>2</sub> for extinction.

P402+P404: Store in a dry place. Store in a closed container.  
P405: Store locked up.  
P501: Dispose of contents/container to the next pollutant collection, Dispose of emptied container to recycling collections.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

**Symbol:**

F, T+, N



**Hazard description:**

highly flammable, very toxic, dangerous for the environment

**R-phrases:**

15/29 - Contact with water liberates toxic, extremely flammable gas.

21 - Harmful in contact with skin

26/28 - Very toxic by inhalation and if swallowed.

32 - Contact with acids liberates very toxic gas.

36 - Irritating to eyes

50 - Very toxic to aquatic organisms.

**S-phrases:**

1/2 - Keep locked up and out of the reach of children.

3/9/14- Keep in a cool well-ventilated place away from water and acids.

30 - Never add water to this product.

36/37 - Wear suitable protective clothing and gloves

45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

61 - Avoid release to the environment. Refer to special instructions/safety data sheets.

In contact with water or acids product evolves the extremely flammable and toxic hydrogen phosphide.

**2.2. Label elements**

See classification according to Regulation (EG) Nr. 1272/2008

**2.3. Other hazards**

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**3: Composition/information on ingredients**

**3.1. Substances**

This product is not a substance, it is a mixture

**3.2. Mixtures**

Preparation with ignition inhibiting additives

Chem. Characterization /	Concentration /	Symbol /	R-phrases /	CAS-No.
Magnesium phosphid	66 %	F,T+,N	R 15/29-21-28-32-50	CAS-Nr. 12057-74-8
Ammonium carbamate	>20%	Xn	R 22-36	CAS-No. 1111-78-0

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#### **4: First aid measures**

##### **4.1. Description of first aid measures**

**After Inhalation:** in case of headache, dizziness, feeling of constriction, difficult breathing and nausea immediately leave the danger zone and seek fresh air; consult a physician; inhale products for acute treatment following exposition of smoke gas (eg a beclometasone (Ventolair®) spray).

**After Eye contact:** remove rests of preparation with fluff-free cloth; rinse with plenty of water and apply eye drops only after no more powdery residues are visible.

**After Skin contact:** remove any rests by brushing; only then use water for cleansing

**After Ingestion:** induce vomiting (not by unconsciousness). Take poisoned victim into the open air immediately and consult a physician and show the label.

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

Headache, dizziness, feeling of constriction, difficult breathing and nausea

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

If unconscious, call emergency physician.

Special aids required for First Aid measures: have methyl prednisolon (application by physician) and products for acute treatment following exposition of smoke gas (eg a beclometasone (Ventolair®) spray) available.

No antidote is available for phosphine/phosphide poisoning. Early recognition and management of the poisoning is essential.

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#### **5: Firefighting measures**

##### **5.1. Extinguishing media**

dry sand or powder and than with CO<sub>2</sub>

##### **5.2. Special hazards arising from the substance or mixture**

In case of fires hazardous combustion gases are formed: caustic phosphoric acid aerosols (phosphoric pentoxide)

##### **5.3. Advice for firefighters**

Stay in dangerous zone only with self-contained breathing apparatus.

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#### **6: Accidental release measures**

##### **6.1. Personal precautions, protective equipment and emergency procedures**

Leave danger zone immediately, ensure adequate ventilation. Warn everybody in the danger zone. Put on respiratory equipment. Wear protective equipment. Keep away unprotected persons. Avoid dust formation. Avoid contact with the spilled product or contaminated surfaces.

##### **6.2. Environmental precautions**

Avoid contamination of waters and soil with the product and large amounts of the contaminated wash water.

##### **6.3. Methods and material for containment and cleaning up**

Dispose contaminated material as waste according to item 13. Ensure adequate ventilation. Do not flush with water or aqueous cleaning agents. Use suitable containers for disposal. Avoid dust formation.

##### **6.4. Reference to other sections**

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#### **7: Handling and storage**

##### **7.1. Precautions for safe handling**

Observe the Ordinance on Hazardous Substances (GefStoffV) and TRGS 500. These include general hygiene measures such as

- Do not smoke, eat and eat in the working areas.
- Wear protective gloves / protective clothing / eye protection.
- Take contaminated clothing and protective equipment off before entering areas in which is eaten.

- Avoid dust formation.

**Information about fire and explosion protection**

Hold respiratory equipment ready. Keep away from water and acid.

**7.2. Conditions for safe storage, including any incompatibilities**

**Information on storage conditions**

Observe TRGS 514 (Storage of very toxic and toxic substances).

Store in tightly closed containers in a cool, dry place. Protect from moisture and water and acid.

Keep locked up and out of the reach of children.

Requirements for storage rooms and containers

Special storage conditions: Avoid contact with water, humidity, acids

VCI storage class: 4.3

**7.3. Specific end use(s)**

See item 7.1 and 7.2

Removal of residues and contaminations on surfaces.

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**8: Exposure controls/personal protection**

**8.1. Control parameters**

according to TRGS 900:

hydrogen phosphide (phosphine) TLV-Value: 0.1 ml/m<sup>3</sup> (ppm), 0,14 mg/m<sup>3</sup> CAS-No. 7803-51-2

**Odour threshold for hydrogen phosphide:**

0.02 up to 3 ppm, depending on the sensitivity

Apply to TRGS 402

**Respiratory protection:** respiratory equipment according to DIN EN 141, Type B, code colour grey

**Hand protection:** suitable gloves for example Nitril and Latex gloves (AQL: 1.5) tested according to EN-374-2 and EN374- 3

**Eye protection:** wear safety goggles according to EN 166:2001.

**Body protection:** suitable protective clothing according to BGR 189 (ATL: "Rules for the use of protective clothing")

**Thermal hazards:** Stay in dangerous zone only with self-contained breathing apparatus.

**8.2. Exposure controls**

See Section 6 and 7

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**9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

**Appearance:**

Form: under the influence of ambient air the solid products develop gaseous phosphine

Colour: powder greyisch-green; tyvek white

Odour: garlic or carbide-like

PH-value (20 /°C): n.a.

Boiling point / range (in /°C): n.a.

Melting point / range (in /°C): phosphide > 500 /°C <sup>11)</sup>

Data relevant to safety:

Flash point in °C: n.a.

Inflammability: in contact with water/humidity, acids an extremely flammable gas is developed

Self-ignition: contains additives to prevent self-ignition

Fire enhancing properties: n.a.

Explosion danger in vol%:

Lower explosion limit: hydrogen phosphide 1.8 <sup>1a)</sup> (1.79-1.89)

Upper explosion limit: n.v.

Further information:  
Vapour pressure: hydrogen phosphide 34.6 bar (20/C)<sup>9)</sup>  
Bulk density: n.a.  
Density: 2.32 g/cm<sup>3</sup>  
General solubility:  
Solubility in water: not applicable due to decomposition  
Liposolubility/solvent: n.t.  
Distribution coefficient (n-octanol/water): n.a.

## 9.2. Other information

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## 10: Stability and reactivity

### 10.1. Reactivity

In contact with water, a toxic and extremely flammable gas is developed. In contact with acids, a very toxic gas is developed.

### 10.2. Chemical stability

The product is stable under inert gas.

### 10.3. Possibility of hazardous reactions

In contact with atmospheric moisture, highly toxic phosphine is developed. Uncontrolled development of hydrogen phosphide can cause fires.

### 10.4. Conditions to avoid

see Section 7

### 10.5. Incompatible materials

Water and acids decompose Magnesium phosphide in a violent reaction to extremely flammable and toxic hydrogen phosphide (phosphine)

### 10.6. Hazardous decomposition products

Phosphorus hydride, phosphorus pentoxide, phosphoric acid, see also section 5.3

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## 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute toxicity:

**Swallowing**, LD<sub>50</sub> rat oral (mg/kg): Magnesium phosphide: 11,2<sup>2)</sup> Magtoxin: 11,5<sup>3)</sup>

**Inhalation**, LC<sub>50</sub> rat inhalative (4hrs.): hydrogen phosphide 11 ppm = 0.015 mg/l<sup>4)</sup>

**Skin contact**, LD<sub>50</sub> rat dermal (mg/kg): 900

**Eye contact**: n. v.

**Cauterizing effect**: Based on available data, the classification criteria are not met.

**Sensitizing effect**: Based on available data, the classification criteria are not met.<sup>10)</sup>

**Repeated dose toxicity**: no chronic effects are known

**Carcinogenic effect**: Based on available data, the classification criteria are not met.

**Genotype varying effect**: Based on available data, the classification criteria are not met.

**Reproduction endangering effect**: Based on available data, the classification criteria are not met.

**Other information**: inhalation and ingestion of large quantities may cause very serious poisoning. Highly dangerous after 1/2 to 1 hour are already 400-600 mg/m<sup>3</sup> = 290-430 ppm phosphine<sup>1c)</sup>

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## 12: Ecological information

### 12.1. Toxicity

Aqueous toxicity: LC50 (rainbow trout, 96 hrs.) = 9,7 \* 10<sup>-3</sup> ppm<sup>6)</sup>

EC50 (daphnia magna, 24 hrs.) = 0.2 mg/l<sup>7)</sup>

ErC50 (Selenastrum capricornutum, 48 h) = 1,44 mg/l<sup>16)</sup>

### 12.2. Persistence and degradability

Phosphine decomposes in the atmosphere within 5 - 28 hours<sup>8)</sup>

**12.3. Bioaccumulative potential**

Log Pow = 0.9 of PH<sub>3</sub>

**12.4. Mobility in soil**

The contamination of soil by phosphine is not possible.

**12.5. Results of PBT and vPvB assessment**

Based on available data, the classification criteria are not fulfilled. Magnesium phosphide and phosphine are neither PBT nor vPvB.

**12.6. Other adverse effects**

Water hazard class: 2 - hazardous to water

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**13: Disposal considerations**

**13.1. Waste treatment methods**

For substance / preparation / residues: product: waste code #: 061301,  
for degassed material, waste code #: 060316

**Recommendation:**

Degassed material should be disposed of under observation of the prevailing regulations

**For contaminated packaging material:**

Make empty containers unfit for further use before disposing properly.

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**14: Transport information**

Technical Name: Magnesium phosphide

**14.1. UN number:**

2011

**14.2. UN proper shipping name**

**ADR/RID**

UN 2011 Magnesium Phosphide, 4.3 (6.1), I, (E)

**IMDG-Code**

class: 4.3 UN-No.: 2011 Packing Group I

EmS-Code: F-G, S-N

Labels: No. 4.3 = main risk; 6.1 = subsidiary risk

**ICAO-TI/IATA-DGR**

Sea transport (IMDG-Code) and packaging instructions: 487

**14.3. Transport hazard class(es)**

Label: Dangerous when wet 4 = main risk

Toxic = subsidiary risk

**14.4. Packing group**

I

**14.5. Environmental hazards**

ADR/RID/ IMDG-Code/ ICAO-TI/IATA-DGR

Remarks: max. weight 1 kg/inner packaging,  
15 kg/outer packaging cargo aircraft only

**14.6. Special precautions for user**

Warning board: starting 20 kgs net weight

Remarks: limited quantities acc. to chapter 3.4 and except for No. 3 GGAV not possible

Mailing: not allowed.

**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**  
not applicable

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**15: Regulatory information**

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

EU Regulation

**Regulation (EC) No 2037/2000 (substances that deplete the ozone layer):**

Not applicable

**Regulation (EC) No 689/2008 (export and import of dangerous chemicals):**

Not applicable

**National regulations:**

Observe Ordinance on Hazardous Substances (GefStoffV) and TRGS 500

Observe TRGS 514 (Storage of very toxic and toxic substances)

Observe TRGS 900

Water hazard class: 2 - hazardous to water

Do not reuse packaging

**15.2. Chemical safety assessment**

See CA-Report of Magnesium phosphide

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**16: Other information'EN 31.5.2010 Official Journal of the European Union L 133/43**

**Changes since the last version**

According to Regulation 453/2010, this safety data sheet was created new

**Literature and data sources**

**Rules**

Preparations Directive (1999/45/EC), as last amended by Regulation 1907/2006.

Substances Directive (67/548/EEC) as last amended by Directive 2009/2/EC

REACH Regulation (EC) No 1907/2006, as last amended by Regulation 453/2010.

Regulation (EC) No 1272/2008, as last amended by Regulation 790/2009

**Hazard statements referring to Section 2 and 3**

**According to Regulation 1272/2008**

GHS02, GHS06, GHS09

H260- In contact with water releases flammable gases which may ignite spontaneously.

H300- Fatal if swallowed.

H311- Toxic in contact with skin.

H319- Causes serious eye irritation.

H400- Very toxic to aquatic life.

EUH029- Contact with water liberates toxic gas.

EUH032- Contact with acids liberates very toxic gas

**According to Directive 67/548/EEC**

15/29 - Contact with water liberates toxic, extremely flammable gas.

21 - Harmful in contact with skin

26/28 - Very toxic by inhalation and if swallowed.

32 - Contact with acids liberates very toxic gas.

36 - Irritating to eyes

50 - Very toxic to aquatic organisms.

**Legend**

\* = changes from previous version

n.a. = not applicable

n.t. = not tested

n.v. = not available

TLV = Threshold Limit Value

Sources:

- 1) WHO Environmental Health Criteria 73: Phosphine and Selected Metal Phosphides: a) S 18, b) S 17+72, c) S 75
- 2) International Bio-Research Inc., D-Hannover: Acute oral toxicity of Magnesium phosphide in rats (01.01.1977)
- 3) Hazleton Laboratories America, Inc.: Acute oral toxicity study in rats of Degesch Magtoxin formulation (1.12.1983)
- 4) Waritz, R. S. & Brown, R. M. (1975): Acute and subacute inhalation toxicities of phosphine, phenylphosphine and triphenylphosphine; Am. Ind. Assoc. J., 36: 452-458.
- 5) US Environmental Protection Agency: EPA chemical profile: Phosphine, Washington DC, 1985
- 6) Laboratory for Pharmacology and Toxicology, D-Hamburg: Prüfung der akuten Toxizität von Magnesiumphosphid an Regenbogenforellen (24.11.1984)
- 7) Ökolimna, D-Burgwedel: Daphnientoxizitätstest mit Magnesiumphosphid, 1986
- 8) Frank, R.; Rippen, G.: Verhalten von Phosphin in der Atmosphäre, Lebensmitteltechnik Juli/August 1987
- 9) Drägerwerk AG: Dräger-Röhrchen Handbuch: Boden-, Wasser- und Luftuntersuchungen sowie technische Gasanalyse, Lübeck, 1993
- 10) Bioagri Laboratórios Ltda.: Evaluation of skin sensitization of test substance DETIA GAS-EX-T - PASTILHAS DE 3g (27.07.2004)
- 11) Siemens Axiva GmbH & Co. KG, D-Frankfurt am Main: Magnesium phosphide technical: Melting point, boiling point, vapour pressure (09.07.2002)
- 12) Siemens Axiva GmbH & Co. KG, D-Frankfurt am Main: Magnesium phosphide technical: Relative density (09.07.2002)
- 13) Siemens Axiva GmbH & Co. KG, D-Frankfurt am Main: Magnesium phosphide technical: Explosive properties. Auto-flammability (solids - determination of relative self-ignition temperature) (09.07.2002)
- 14) Newton, P. E. (1998); report no. 750-001
- 15) Cabrol Telle, A. M. et al. (1985), Fd. Chem. Toxic. 23 (11), 1001-1009
- 16) K.Kasthuri Raman (2000): ALGA (Selenastrum capricornutum), GROWTH INHIBITION TEST WITH MAGNESIUM PHOSPHIDE PELLET, JAI RESEARCH FOUNDATION, GUJARAT, INDIA, unpublished report number 2503, 10.03.2000

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The above information is based on our present state of knowledge. It describes the product with respect to the safety measures required and should not therefore be construed as guaranteeing specific properties nor must it be altered or transferred to other products.

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