



MATERIAL SAFETY DATA SHEET

acc. to Regulation (EC) no.1907/2006

Date of issue: 15.10.2004

Version: 3

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Date of revision: 01.06.2010

Product name:

2,4-D ACID

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Identification of the substance

Substance name: 2,4-D acid

Use of the substance

Esters and salts of 2,4-D acid used as herbicidal agents.

Company identification

Makhteshim Agan Agro Poland S.A.
Sienkiewicza 4
56-120 Brzeg Dolny
phone: +48 71 794 25 07; fax: +48 71 794 21 50

E-mail address of the person responsible for drafting this MSDS:
boleslaw.rippel@ma-agro.pl
marcin.hatalski@ma-agro.pl

Emergency telephone

Available 24h: +48 71 794 25 55 or +48 71 794 24 41 to PCC Rokita SA or to the local Fire Fighting Services.

2. HAZARDS IDENTIFICATION

Harmful product (Xn)

Harmful if swallowed. (R22)
Irritating to respiratory system (R37)
Risk of serious damage to eyes. (R41)
May cause sensitization by skin contact. (R43)
Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. (R52/53)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	Molecular formula	Content [%]	Classification	Index number	CAS number	EC number
2,4-dichlorophenoxyacetic acid (2,4-D)	C ₈ H ₆ Cl ₂ O ₃	98	Xn; R22 Xi; R37-41 R43 R52/53	607-039-00-8	94-75-7	202-361-1

4. FIRST AID MEASURES

First Aid Measures

Make sure that the medical personnel knows the material they are dealing with and has all necessary protection measures available to it.

Inhalation

If inhaled, remove to fresh air. Get medical attention immediately.

Skin contact

Remove contaminated clothing immediately. Flush contaminated skin with plenty of water with soap.

Eye contact

Flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.



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Ingestion

Do not give anything to drink. Induce vomiting. Get medical attention immediately.

Indications for physician

The first action of a physician taking care over an intoxicated person is assessing the appropriateness and effectiveness of first-aid. Further procedures depend on the status of the intoxicated patient. There is no specific antidote. Administer symptomatic treatment. Intoxicated persons should remain under medical care for at least 48 hours.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Fire foam and carbon dioxide and dry powder extinguishers, water (dispersed sprays).

Extinguishing media to be avoided for safety reasons

Not known.

Specific hazards

Drums exposed to flames or high temperature must be cooled with dispersed water spray and removed from the affected area if possible.

Special fire protection equipment for fire fighters

The personnel directly participating in fire-fighting operations should wear proper, light clothes, protecting the skin (gas proof) and be provided with equipment isolating the airways because of the toxic burning products, such as: hydrogen chloride, carbon monoxide and phosgene.

Additional Information

None

6. ACCIDENTAL RELEASE MEASURES

Individual protective measures

Do not inhale vapours. Avoid contact with substance.

Environmental protective measures

Prevent large quantities of product from entering into sewage, underground water, surface water and soil. Notify respective authorities in case of environmental contamination.

Cleanup

Stop the spill, if possible (e.g. seal up, place any damaged container inside an emergency container). Use a shovel or a scoop to collect substance to a closed container and handle or dispose of in accordance with respective regulations (see point 13). Rinse contaminated surface thoroughly with water.

7. HANDLING AND STORAGE

Handling

Handle as directed on the label - instruction attached to container. Prepare working solution in volumes necessary for immediate use only.

Handle as directed by the generally accepted rules of industrial safety and hygiene. Keep away from unauthorised persons.



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Storage

Store in original, air-tight closed containers, in dry and well ventilated warehouses in temperatures from 0°C to 30°C, away from food products, animal foods, food containers, heaters and open flame sources, away from unauthorised persons, especially children. Keep away from unauthorised persons.

The substance stability period is 3 years of the date of manufacturing. After that date, substance can be used upon verification whether its parameters comply with technical requirements. In case of non-compliance, contact the manufacturer.

Special application

Not known.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

2,4-D (2,4-dichlorophenoxyacetic acid)TWA – 7 mg/m³

STEL – not determined

CEIL – not determined

Personal Protective Equipment

Respiratory tract protection

Not required in normal conditions of use.

Face and eye protection

Required (air-tight goggles in case of direct contact).

Hand protection

Use protective gloves which comply with EN 374.

Use nitrile gloves or of similar resistance.

Time of material resistance - according to gloves manufacturer.

Skin protection

Protective clothing.

Change contaminated clothing immediately.

Hygiene

Wash hands and face after working with substance. Do not eat or drink in the area where the material is handled.

Other protective equipment

In normal conditions of use, no protective equipment of the respiratory tract is required. However, it is recommended at risk of product inhalation, e.g., when spraying. After use, decontaminate the equipment with sodium hypochlorite. Use standard protective clothing.

Environmental hazards control

Environmental hazards should be controlled in accordance with the respective national and community environmental law.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

crystalline powder

Colour

white to beige

Odour

phenol

pH of 1% solution

2.8

Temperature

melting point

135 ÷ 140°C

boiling point

319°C at 1001 hPa

ignition

211.0°C ± 2.1°C

self-ignition

none under 750°C



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Combustibility	non-combustible
Explosiveness	
upper and lower limits of explosiveness	n/a
Oxidizing properties	none
Vapour pressure	1.69×10^{-4} Pa at 21°C
Relative density	1.395 g/ml
Rate of evaporation	no data
Surface tension	no data
Solubility	
in water	44.12 g/dm ³ at 20°C (pH = 7) 29.55 g/dm ³ at 20°C (pH = 5) 0.37 g/dm ³ at 20°C (pH = 1)
in organic solvents	in methanol: 520 g/dm ³ at 20°C in acetone: 417.4 g/dm ³ at 20°C in isopropanol: 249.8 g/dm ³ at 20°C in xylene: 3.11 g/dm ³ at 20°C
Partition coefficient n-octanol/water	$\log P_{ow} = 2.68$
Other properties	none

10. STABILITY AND REACTIVITY

Stability	Stable in normal conditions
Conditions to be avoided	Temperature above 30°C, sunlight.
Materials to be avoided	Substance may react with strong oxidizing agents.
Dangerous decomposition products	carbon monoxide, HCl, nitric oxides

11. TOXICOLOGICAL INFORMATION

Oral acute toxicity	LD ₅₀ in rat > 500 mg/kg b.w.
Dermal acute toxicity	LD ₅₀ in rat > 2000 mg/kg b.w.
Toxicity by inhalation	CL ₅₀ in rat > 5000 mg/m ³ (after 4 hours of exposure)
Skin contact	Product not irritating to skin.
Eyes contact	Product causing damage to eyes.
Sensitization properties	Product causing skin sensitization.
Chronic toxicity	NOAEL (rat) – 600 ppm (600 mg/kg fodder/day)
Reproductive toxicity	NOAEL (rabbit) – 30 mg/kg/day



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12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity for aquatic organisms

Carp (*Cyprinus carpio*)
LC₅₀ = 239.9 mg/l (after 96 hrs)
Rainbow trout (*Oncorhynchus mykiss Walb.*)
LC₅₀ = 239.9 mg/l (after 96 hrs)
Daphnia magna (*Daphnia magna*)
EC₅₀ = 134.2 mg/l (after 24 hrs)
EC₅₀ = 134.2 mg/l (after 48 hrs)
Algae (*Scenedesmus subspicatus*)
IC₅₀ = 582.2 mg/l (after 72 hrs)
Algae (*Selenastrum capricornutum*)
IC₅₀ = 8.4 mg/l (after 72 hrs)

Toxicity for bees

Alimentary apitoxicity
LD₅₀ > 100 µg/bee
Dorsal contact apitoxicity
LD₅₀ > 200 µg/bee

Toxicity for earthworms

LC₅₀ > 1000 mg/kg of dry mass of artificial base after 7 and 14 days of experiment

Toxicity for birds

Japanese quail
LC₅₀ = 617.3 mg/kg b.w.

Movement

2,4-D forms no soil deposits and its movement through the soil varies. The rate of 2,4-D movement depends on soil type.

Stability and decomposition

99% degradation in water after 28 days.

Ability to bioaccumulate

2,4-D acid has low bioaccumulation potential.
logP_{ow} = 2.68

13. DISPOSAL CONSIDERATIONS

Product

Do not dump into any sewers. Prevent from entering into surface water and underground water. Do not dump into any neutral waste dumping site. Recycling or disposal of waste product must be in compliance with all legal regulations (the Waste Act) and be carried out in installations or devices which comply with the applicable requirements (licensed plants or the manufacturer).
Waste code - 02 01 08*

Packaging

Empty packaging should be treated as a dangerous waste. Re-use is permitted after thorough washing with water or other equivalent cleanup procedure. Preferably, packaging should be washed immediately after emptying. Recycling or disposal of such a packaging must be in compliance with all legal regulations (Packaging and Packaging Waste Act).
Waste code - 15 01 10*



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14. TRANSPORT INFORMATION

Land Transport ADR/RID

ADR Correct name in transport:
UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
SOLID, N.O.S. (2,4-D acid), 9, III

RID Correct name in transport:
90 UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
SOLID, N.O.S. (2,4-D acid), 9, III

Class: 9; Classification Code: M7; Packing group: III;
Labels: 9; Special regulations: 274, 335, 601;
Limited quantities: LQ17;
Packing: Instructions: P002, IBC08, LP02, R001;
Special packing regulations: PP12, B3; Bulk packing: MP10;
Portable tank: Instructions: T1, BK1, BK2; Special regulations: TP33;
ADR/RID tank: Tank code: SGAV, LGBV; Special regulations: none
ADR vehicle: AT, Transport category: 3; Tunnel restriction code: E;
Special carriage regulations: Items shipped: V13; Bulk: VV1;
Loading, unloading, handling: CV13;
Handling (ADR): none;
Hazard identification number: 90

Sea transport IMDG

Correct name in transport:
UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
SOLID, N.O.S. (2,4-D acid)

Class: 9; Packing group: III;
Labels: 9; MARINE POLLUTANT; Special regulations: 274, 909, 944;
Limited quantities: 5 kg;
Packing: Instructions: P002, IBC08, LP02;
Special packing regulations: PP12,
Tank instructions: IMO: none; UN: prohibited;
Special regulations: none;
EmS: F-A, S-F;
Stowage, segregation: Category A

Air transport ICAO-TI and IATA-DGR

no information

15. REGULATORY INFORMATION

Packaging marking

acc. to the Regulation of the Minister of Health of 5 March 2009 on marking packaging for dangerous substances, dangerous preparations and some chemical preparations (Journal of Laws of 2009, No. 53 item 439, as amended).



Harmful product (Xn)
contains 2,4-dichlorophenoxyacetic acid



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Risk phrases – indicating risks

R22	Harmful if swallowed.
R37	Irritating to respiratory system.
R41	Risk of serious damage to eyes.
R43	May cause sensitization by skin contact.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety phrases – indicating conditions for safe use

S2	Keep out of the reach of children.
S24/25	Avoid contact with skin and eyes.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S46	If swallowed, seek medical advice immediately and show this container or label.
S61	Avoid release to the environment. Refer to special instructions / Safety Data Sheets.

This Material Safety Data Sheet was drafted and filled out according to the following legal regulations:

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) of 18 December 2006;

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending Regulation (EC) 1907/2006;

Act on chemical substances and preparations of 11 January 2001 (Journal of Laws of 2001, No. 11, item 84, as amended);

Regulation of the Minister of Agriculture and Rural Development of June 8, 2004 on the requirements for the content of the label-instruction of plant pesticide applications. Journal of Laws of 2004, no. 141, item 1498, as amended);

Regulation of the Minister of Health of 4 September 2007 amending the regulation on criteria and chemical substances and preparations classification (Journal of Laws of 2007 no 174, item 1222, as amended);

Act on packaging and waste packaging of 11 May 2001 (Journal of Laws of 2001, No. 63, item 638, as amended);

Regulation of the Minister of Labour and Welfare concerning permissible exposure limit and occupational exposure limits of 29 November 2002 (Journal of Laws of 2002, No. 217, item 1833, as amended);

Wastes Management Act of 27 April 2001 (Journal of Laws No. 62, item 628, as amended);

Dangerous Goods Road Transport Act of 28 October 2002. (Journal of Laws of 2002, No. 199, item 1671, as amended);

Act of 31 March 2004 on Transport of Dangerous Goods by Rail. (Journal of Laws of 2004, No. 97, item 962, as amended);

Statement of the Government as of 26 July 2005 concerning coming into force amendments to the Appendices A and B to the European Agreement concerning the International Transport of Dangerous Goods by Road (ADR), concluded in Geneva on 30 September 1957 (Journal of Laws of 2005 no. 178, item 1481, as amended);

Regulation of the Minister of Health of 5 March 2009 on marking packaging for dangerous substances, dangerous preparations and some chemical preparations (Journal of Laws of 2009, No. 53, item 439, as amended).

16. OTHER INFORMATION

Risk phrases

R22	Harmful if swallowed.
R37	Irritating to respiratory system.
R41	Risk of serious damage to eyes.
R43	May cause sensitization by skin contact.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Required training

Contractors handling this substance should read the label on product container.



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Recommended limits of application

For agricultural use only.

Further information

Manufacturer or distributor

Sources of key data

Own studies and available literature data

Changes in the MSDS

Changes in point 1, 14, MSDS layout changes.

Additional Information

All the information and data contained in this Material Safety Data Sheet refer solely to a specific technical product and cannot be referred to after its processing.

In the case of combined use with other substances/mixtures, take into account all notes and remarks on their labels and in MSDSs.

The above information has been prepared following our most recent and up-to-date knowledge and it describes the product from the point of view of health and natural environment protection requirements and with regards to safe use principles. This information should not, however, be interpreted as any guarantee of specific product properties.