



SAFETY DATA SHEET

Corteva Agriscience UK Ltd

Safety Data Sheet according to Reg. (EU) No 2015/830

Product name: INSTINCT™ Nitrogen Stabilizer

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Corteva Agriscience UK Ltd encourages you and expects you to read and understand the entire SDS as there is important information throughout the document. This SDS provides users with information relating to the protection of human health and safety at the workplace, protection of the environment and supports emergency response. Product users and applicators should primarily refer to the product label attached to or accompanying the product container.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Product name: INSTINCT™ Nitrogen Stabilizer

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

Identified uses: Fertilizer additive Nitrogen Stabilizer

1.3 Details of the supplier of the safety data sheet

COMPANY IDENTIFICATION

Corteva Agriscience UK Ltd
CPC2 CAPITAL PARK
FULBOURN CAMBRIDGE - England - CB21 5XE
UNITED KINGDOM

Customer Information Number : +44 8006 89 8899
E-mail address : SDS@corteva.com

1.4 EMERGENCY TELEPHONE

24-Hour Emergency Contact : +44 161 88 41235
Local Emergency Contact : +44 161 88 41235

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:

Skin sensitization - Category 1 - H317

Serious eye damage - Category 1 - H318

Long-term (chronic) aquatic hazard - Category 2 - H411

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

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:

Hazard pictograms



Signal Word: DANGER

Hazard statements

- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P302 + P352 IF ON SKIN: Wash with plenty of water.
- P305 + P351 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
- + P338 + P310
- P501 Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

Supplemental information

- EUH401 To avoid risks to human health and the environment, comply with the instructions for use.
- EUH204 Contains isocyanates. May produce an allergic reaction.

2.3 Other hazards

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
CASRN 1929-82-4 EC-No. 217-682-2 Index-No. 006-057-00-8	—	26.01%	nitrapyrin (ISO)	Acute Tox. - 4 - H302 Eye Irrit. - 2 - H319 Skin Sens. - 1 - H317 Aquatic Chronic - 2 - H411

CASRN 64742-94-5 EC-No. 265-198-5 Index-No. 649-424-00-3	–	>= 3.0 - < 10.0 %	solvent naphtha (petroleum), heavy arom.	Asp. Tox. - 1 - H304 Aquatic Chronic - 2 - H411
CASRN 68070-99-5 EC-No. – Index-No. –	–	>= 1.0 - < 3.0 %	Decyl alcohol, ethoxylated, phosphated, potassium salt	Skin Irrit. - 2 - H315 Eye Dam. - 1 - H318
CASRN 1129-19-7 EC-No. – Index-No. –	–	>= 1.0 - < 3.0 %	4,6-dichloro-2-trichloromethyl pyridine	Acute Tox. - 4 - H302 Skin Irrit. - 2 - H315 Eye Irrit. - 2 - H319
CASRN 73018-34-5 EC-No. – Index-No. –	–	>= 1.0 - < 3.0 %	Polyoxyethylene octyl ether phosphate potassium salt	Skin Irrit. - 2 - H315 Eye Dam. - 1 - H318
CASRN 2176-62-7 EC-No. 218-535-5 Index-No. –	–	>= 0.3 - < 1.0 %	2,3,4,5,6-Pentachloropyridine	Acute Tox. - 4 - H302 Skin Sens. - 1 - H317 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
CASRN 1197-03-1 EC-No. – Index-No. –	–	>= 0.1 - < 0.25 %	3-Chloro-6-(trichloromethyl)pyridine	Acute Tox. - 4 - H302 Acute Tox. - 3 - H331 Eye Irrit. - 2 - H319 Skin Sens. - 1 - H317 Aquatic Chronic - 2 - H411
CASRN 2634-33-5 EC-No. 220-120-9 Index-No. 613-088-00-6	–	>= 0.0025 - < 0.025 %	1,2-benzisothiazol-3(2H)-one	Acute Tox. - 4 - H302 Skin Irrit. - 2 - H315 Eye Dam. - 1 - H318 Skin Sens. - 1 - H317 Aquatic Acute - 1 - H400 Aquatic Chronic - 3 - H412

Substances with a workplace exposure limit

CASRN 7647-14-5 EC-No. 231-598-3 Index-No. –	–	>= 3.0 - < 10.0 %	Sodium chloride	Not classified
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CASRN 57-55-6 EC-No. 200-338-0 Index-No. —	—	>= 1.0 - < 3.0 %	Propylene glycol	Not classified
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For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Inhalation: Move person to fresh air; if effects occur, consult a physician.

Skin contact: Wash off with plenty of water.

Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

Ingestion: No emergency medical treatment necessary.

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

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Water spray Alcohol-resistant foam Dry chemical

Unsuitable extinguishing media: None known.

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Hydrogen chloride.

Unusual Fire and Explosion Hazards: Exposure to combustion products may be a hazard to health. Do not allow run-off from fire fighting to enter drains or water courses.

5.3 Advice for firefighters

Fire Fighting Procedures: 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.

Remove undamaged containers from fire area if it is safe to do so. Evacuate area. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. 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.

Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Ensure adequate ventilation. Use personal protective equipment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

6.2 Environmental precautions: If the product contaminates rivers and lakes or drains inform respective authorities. Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

6.3 Methods and materials for containment and cleaning up: Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container. Keep in suitable, closed containers for disposal. Wipe up with absorbent material (e.g. cloth, fleece). Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). See Section 13, Disposal Considerations, for additional information.

6.4 Reference to other sections:

See sections: 7, 8, 11, 12 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling: Avoid formation of aerosol. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Provide sufficient air exchange and/or exhaust in work rooms. Do not breathe vapours/dust. Do not smoke. Handle in accordance with good industrial hygiene and safety practice. Avoid exposure - obtain special instructions before use. Smoking, eating and drinking should be prohibited in the application area. Avoid inhalation of vapour or mist. Do not swallow. Avoid contact with

eyes. Avoid prolonged or repeated contact with skin. Keep container tightly closed. Take care to prevent spills, waste and minimize release to the environment. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

7.2 Conditions for safe storage, including any incompatibilities: Store in a closed container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in properly labelled containers. Store in accordance with the particular national regulations.

Do not store with the following product types: Strong oxidizing agents.
Unsuitable materials for containers: None known.

7.3 Specific end use(s): Refer to product label.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value/Notation
solvent naphtha (petroleum), heavy arom.	ACGIH	TWA	200 mg/m ³ , total hydrocarbon vapor
	Corteva OEL	TWA	100 mg/m ³
	Corteva OEL	STEL	300 mg/m ³
Sodium chloride	Dow IHG	TWA	10 mg/m ³
Propylene glycol	US WEEL	TWA	10 mg/m ³
	GB EH40	TWA	474 mg/m ³ 150 ppm
	GB EH40	TWA	10 mg/m ³
	GB EH40	TWA particles	10 mg/m ³
	GB EH40	TWA Total vapour and particles	474 mg/m ³ 150 ppm
2,3,4,5,6-Pentachloropyridine	Dow IHG	TWA	7 mg/m ³
1,2-benzisothiazol-3(2H)-one	Dow IHG	TWA	0.06 mg/m ³
	Dow IHG	STEL	0.1 mg/m ³

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Derived No Effect Level

Sodium chloride

Workers

Acute systemic effects		Acute local effects		Long-term systemic effects		Long-term local effects	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
295.52 mg/kg bw/day	2068.62 mg/m ³	n.a.	n.a.	295.52 mg/kg bw/day	2068.62 mg/m ³	n.a.	n.a.

Consumers

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
126.65 mg/kg bw/day	443.28 mg/m3	126.65 mg/kg bw/day	n.a.	n.a.	126.65 mg/kg bw/day	443.28 mg/m3	126.65 mg/kg bw/day	n.a.	n.a.

Propylene glycol

Workers

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	168 mg/m3	n.a.	10 mg/m3

Consumers

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	50 mg/m3	n.a.	n.a.	10 mg/m3

Predicted No Effect Concentration

Sodium chloride

Compartment	PNEC
Fresh water	5 mg/l
Intermittent use/release	19 mg/l
Sewage treatment plant	500 mg/l
Soil	4.86 mg/kg

Propylene glycol

Compartment	PNEC
Fresh water	260 mg/l
Marine water	26 mg/l
Intermittent use/release	183 mg/l
Sewage treatment plant	20000 mg/l
Fresh water sediment	572 mg/kg dry weight (d.w.)
Marine sediment	57.2 mg/kg dry weight (d.w.)
Soil	50 mg/kg dry weight (d.w.)

8.2 Exposure controls

Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

Skin protection

Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. When prolonged or frequently repeated contact may occur, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator.

Use the following CE approved air-purifying respirator: Organic vapor cartridge with a particulate pre-filter, type AP2 (meeting standard EN 14387).

Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Physical state	Liquid.
Color	off-white
Odor	Gasoline-like
Odor Threshold	No data available
pH	8.54
Melting point/range	Not applicable
Freezing point	No data available

Boiling point (760 mmHg)	No data available
Flash point	closed cup > 100 °C
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	Not Applicable
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Kinematic Viscosity	No data available
Explosive properties	No
Oxidizing properties	No significant increase (>5C) in temperature.

9.2 Other information

Liquid Density	1.196 g/ml at 20 °C
Molecular weight	No data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Not classified as a reactivity hazard.

10.2 Chemical stability: No decomposition if stored and applied as directed. Stable under normal conditions.

10.3 Possibility of hazardous reactions: None known.
No hazards to be specially mentioned.

10.4 Conditions to avoid: None known.

10.5 Incompatible materials: None.

10.6 Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide (CO₂) hydrogen chloride

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information appears in this section when such data is available.

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

Based on information for component(s):

LD50, Rat, > 2,000 mg/kg Estimated.

Acute dermal toxicity

Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Based on information for component(s):

LD50, Rat, > 2,000 mg/kg Estimated.

Acute inhalation toxicity

No adverse effects are anticipated from single exposure to mist. Based on the available data, respiratory irritation was not observed.

As product: The LC50 has not been determined.

Skin corrosion/irritation

Prolonged contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Sensitization

For respiratory sensitization:

No relevant data found.

For skin sensitization:

For the active ingredient(s):

Has caused allergic skin reactions when tested in guinea pigs.

Specific Target Organ Systemic Toxicity (Single Exposure)

Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For the active ingredient(s):

In animals, effects have been reported on the following organs:

Blood.

Kidney.

Liver.

Female reproductive organs.

Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

Carcinogenicity

For the active ingredient(s): Kidney effects and/or tumors have been observed in male rats. These effects are believed to be species specific and unlikely to occur in humans.

Teratogenicity

For the active ingredient(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

Reproductive toxicity

For the active ingredient(s): In animal studies, did not interfere with reproduction.

Mutagenicity

For the active ingredient(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard

Based on physical properties, not likely to be an aspiration hazard.

COMPONENTS INFLUENCING TOXICOLOGY:

nitrapyrin (ISO)

Acute inhalation toxicity

Prolonged excessive exposure to dust may cause adverse effects. Dust may cause irritation to upper respiratory tract (nose and throat). Vapor from heated material may cause adverse effects.

LC50, Rat, 4 Hour, vapour, > 3.51 mg/l No deaths occurred at this concentration. The LC50 value is greater than the Maximum Attainable Concentration.

solvent naphtha (petroleum), heavy arom.

Acute inhalation toxicity

For similar material(s): LC50, Rat, 4 Hour, dust/mist, > 5.28 mg/l

Decyl alcohol, ethoxylated, phosphated, potassium salt

Acute inhalation toxicity

The LC50 has not been determined.

4,6-dichloro-2-trichloromethyl pyridine

Acute inhalation toxicity

Brief exposure (minutes) is not likely to cause adverse effects.

The LC50 has not been determined.

Polyoxyethylene octyl ether phosphate potassium salt

Acute inhalation toxicity

The LC50 has not been determined.

2,3,4,5,6-Pentachloropyridine

Acute inhalation toxicity

At room temperature, exposure to vapor is minimal due to low volatility; vapor from heated material may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat). In humans, symptoms may include: Headache. May cause dizziness and drowsiness.

As product: The LC50 has not been determined.

3-Chloro-6-(trichloromethyl)pyridine

Acute inhalation toxicity

LC50, Rat, 4 Hour, vapour, > 3.51 mg/l

1,2-benzisothiazol-3(2H)-one

Acute inhalation toxicity

The LC50 has not been determined.

Sodium chloride

Acute inhalation toxicity

Dust may cause irritation to upper respiratory tract (nose and throat).

LC50, Rat, 1 Hour, dust/mist, > 42 mg/l

Propylene glycol

Acute inhalation toxicity

Mist may cause irritation of upper respiratory tract (nose and throat). LC50, Rabbit, 2 Hour, dust/mist, 317.042 mg/l No deaths occurred at this concentration.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicological information appears in this section when such data is available.

12.1 Toxicity

nitrapyrin (ISO)

Acute toxicity to fish

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

LC50, Lepomis macrochirus (Bluegill sunfish), static test, 96 Hour, 3.4 - 7.9 mg/l, OECD Test Guideline 203 or Equivalent

LC50, Rainbow trout (Oncorhynchus mykiss), static test, 96 Hour, 4 mg/l

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), flow-through test, 48 Hour, 2.2 mg/l

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 1.7 mg/l

Chronic toxicity to fish

NOEC, Fathead minnow (Pimephales promelas), 34 d, 2.87 mg/l

Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm).

oral LD50, Anas platyrhynchos (Mallard duck), 2708mg/kg bodyweight.

dietary LC50, Anas platyrhynchos (Mallard duck), 1466mg/kg diet.

dietary LC50, Coturnix japonica (Japanese quail), 820mg/kg diet.

oral LD50, Apis mellifera (bees), 48 Hour, > 100µg/bee

contact LD50, Apis mellifera (bees), 48 Hour, > 100µg/bee

Toxicity to soil-dwelling organisms

LC50, Eisenia fetida (earthworms), 15 d, survival, 209 mg/kg

solvent naphtha (petroleum), heavy arom.**Acute toxicity to fish**

For similar material(s):

Material is toxic to aquatic organisms (LC50/EC50/IC50 between 1 and 10 mg/L in the most sensitive species).

EC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, 3.6 mg/l

LL50, Oncorhynchus mykiss (rainbow trout), semi-static test, 96 Hour, 2 - 5 mg/l

Acute toxicity to aquatic invertebrates

For similar material(s):

EC50, Daphnia magna (Water flea), semi-static test, 48 Hour, 1.1 mg/l

EL50, Daphnia magna (Water flea), static test, 48 Hour, 1.4 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

For similar material(s):

EC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, 7.9 mg/l

EL50, Pseudokirchneriella subcapitata (green algae), static test, 72 Hour, Growth inhibition (cell density reduction), 1 - 3 mg/l, OECD Test Guideline 201

Decyl alcohol, ethoxylated, phosphated, potassium salt**Acute toxicity to fish**

No relevant data found.

4,6-dichloro-2-trichloromethyl pyridine**Acute toxicity to fish**

No relevant data found.

Polyoxyethylene octyl ether phosphate potassium salt**Acute toxicity to fish**

No relevant data found.

2,3,4,5,6-Pentachloropyridine**Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, Pimephales promelas (fathead minnow), flow-through test, 96 Hour, 0.47 mg/l

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), static test, 96 Hour, Growth rate inhibition, > 4 mg/l

3-Chloro-6-(trichloromethyl)pyridine**Acute toxicity to fish**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

Bluegill sunfish (Lepomis macrochirus), Static, 96 Hour, 3.4 - 7.9 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

LC50, Daphnia magna (Water flea), flow-through test, 48 Hour, 2.2 mg/l

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 1.7 mg/l

Chronic toxicity to fish

Fathead minnow (*Pimephales promelas*), 34 d, 2.87 mg/l

Toxicity to Above Ground Organisms

Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg).

oral LD50, *Anas platyrhynchos* (Mallard duck), 2,708 mg/kg

Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm).

dietary LC50, *Anas platyrhynchos* (Mallard duck), 1466mg/kg diet.

dietary LC50, *Coturnix japonica* (Japanese quail), 820 ppm

Toxicity to soil-dwelling organisms

LC50, *Eisenia fetida* (earthworms), 15 d, survival, 209 mg/kg

1,2-benzisothiazol-3(2H)-one**Acute toxicity to fish**

Material is very toxic to aquatic organisms (LC50/EC50/IC50 below 1 mg/L in the most sensitive species).

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 1.9 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), flow-through test, 48 Hour, 3.7 mg/l, OECD Test Guideline 202 or Equivalent

LC50, Mysid shrimp (*Mysidopsis bahia*), 96 Hour, 1.9 mg/l

Acute toxicity to algae/aquatic plants

ErC50, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, 0.8 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, *Pseudokirchneriella subcapitata* (green algae), static test, 72 Hour, Growth rate, 0.21 mg/l, OECD Test Guideline 201 or Equivalent

ErC50, diatom *Skeletonema costatum*, static test, 72 Hour, 0.36 mg/l, OECD Test Guideline 201 or Equivalent

NOEC, diatom *Skeletonema costatum*, static test, 72 Hour, Growth rate, 0.15 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

EC50, Bacteria (active sludge), Respiration inhibition of activated sludge, 3 Hour, 28.52 mg/l

Sodium chloride**Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, *Lepomis macrochirus* (Bluegill sunfish), flow-through test, 96 Hour, 5,840 mg/l, OECD Test Guideline 203 or Equivalent

LC50, *Pimephales promelas* (fathead minnow), static test, 96 Hour, 10,610 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, 1,900 mg/l

Acute toxicity to algae/aquatic plants

EC50, Other, static test, 120 Hour, Growth inhibition (cell density reduction), 2,430 mg/l, OECD Test Guideline 201 or Equivalent

Toxicity to bacteria

LC50, activated sludge, > 1,000 mg/l, OECD 209 Test

Propylene glycol**Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 Hour, 40,613 mg/l, OECD Test Guideline 203

Acute toxicity to aquatic invertebrates

LC50, Ceriodaphnia dubia (water flea), static test, 48 Hour, 18,340 mg/l, OECD Test Guideline 202

Acute toxicity to algae/aquatic plants

ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate inhibition, 19,000 mg/l, OECD Test Guideline 201

Toxicity to bacteria

NOEC, Pseudomonas putida, 18 Hour, > 20,000 mg/l

Chronic toxicity to aquatic invertebrates

NOEC, Ceriodaphnia dubia (water flea), semi-static test, 7 d, number of offspring, 13,020 mg/l

12.2 Persistence and degradability**nitrapyrin (ISO)**

Biodegradability: Chemical degradation (hydrolysis) is expected in the environment within days to weeks. Degradation is expected in the soil environment within days to weeks.

Theoretical Oxygen Demand: 0.97 mg/mg

Stability in Water (1/2-life)

Hydrolysis, half-life, 186 Hour, pH 5, Half-life Temperature 25 °C

Hydrolysis, half-life, 173 - 233 Hour, pH 7, Half-life Temperature 25 °C

Hydrolysis, half-life, 129 Hour, pH 9, Half-life Temperature 25 °C

solvent naphtha (petroleum), heavy arom.

Biodegradability: For similar material(s): Biodegradation may occur under aerobic conditions (in the presence of oxygen). Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

Biodegradation: 58.6 %

Exposure time: 28 d

Method: OECD Test Guideline 301F

Decyl alcohol, ethoxylated, phosphated, potassium salt

Biodegradability: No relevant data found.

4,6-dichloro-2-trichloromethyl pyridine

Biodegradability: No relevant data found.

Polyoxyethylene octyl ether phosphate potassium salt

Biodegradability: No relevant data found.

2,3,4,5,6-Pentachloropyridine

Biodegradability: No relevant data found.

Theoretical Oxygen Demand: 0.64 mg/mg

3-Chloro-6-(trichloromethyl)pyridine

Biodegradability: Chemical degradation (hydrolysis) is expected in the environment within days to weeks. Degradation is expected in the soil environment within days to weeks.

Theoretical Oxygen Demand: 0.97 mg/g

Stability in Water (1/2-life)

, half-life, 186 Hour, pH 5, Half-life Temperature 25 °C, Hydrolysis
, half-life, 173 - 233 Hour, pH 7, Half-life Temperature 25 °C, Hydrolysis
, half-life, 129 Hour, pH 9, Half-life Temperature 25 °C, Hydrolysis

1,2-benzisothiazol-3(2H)-one

Biodegradability: Abiotic degradation: The material is rapidly degradable by abiotic means.

Biodegradation: 24 %

Exposure time: 28 d

Method: OECD Test Guideline 301B or Equivalent

Sodium chloride

Biodegradability: Biodegradation is not applicable.

Propylene glycol

Biodegradability: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation may occur under anaerobic conditions (in the absence of oxygen).
10-day Window: Pass

Biodegradation: 81 %

Exposure time: 28 d

Method: OECD Test Guideline 301F or Equivalent

10-day Window: Not applicable

Biodegradation: 96 %

Exposure time: 64 d

Method: OECD Test Guideline 306 or Equivalent

12.3 Bioaccumulative potential

nitrapyrin (ISO)

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient: n-octanol/water(log Pow): 3.324 Measured

Bioconcentration factor (BCF): < 85 Lepomis macrochirus (Bluegill sunfish) 30 d Measured

solvent naphtha (petroleum), heavy arom.

Bioaccumulation: For similar material(s): Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

4,6-dichloro-2-trichloromethyl pyridine

Bioaccumulation: No relevant data found.

2,3,4,5,6-Pentachloropyridine

Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient: n-octanol/water(log Pow): 3.53 Measured

3-Chloro-6-(trichloromethyl)pyridine

Bioconcentration factor (BCF): < 85 Bluegill sunfish (Lepomis macrochirus) 30 d Measured

1,2-benzisothiazol-3(2H)-one

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): 1.19 OECD Test Guideline 117 or Equivalent

Bioconcentration factor (BCF): 3.2 Fish Calculated.

Sodium chloride

Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility. Partitioning from water to n-octanol is not applicable.

Propylene glycol

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient: n-octanol/water(log Pow): -1.07 Measured

Bioconcentration factor (BCF): 0.09 Estimated.

12.4 Mobility in soil

nitrapyrin (ISO)

Potential for mobility in soil is medium (Koc between 150 and 500).

Partition coefficient (Koc): 321 Measured

solvent naphtha (petroleum), heavy arom.

No data available.

4,6-dichloro-2-trichloromethyl pyridine

No relevant data found.

2,3,4,5,6-Pentachloropyridine

No data available.

1,2-benzisothiazol-3(2H)-one

Potential for mobility in soil is high (Koc between 50 and 150).

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Partition coefficient (Koc): 104 Estimated.

Sodium chloride

Potential for mobility in soil is very high (Koc between 0 and 50).

Propylene glycol

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Potential for mobility in soil is very high (Koc between 0 and 50).

Partition coefficient (Koc): < 1 Estimated.

12.5 Results of PBT and vPvB assessment

nitrapyrin (ISO)

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

solvent naphtha (petroleum), heavy arom.

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Decyl alcohol, ethoxylated, phosphated, potassium salt

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

4,6-dichloro-2-trichloromethyl pyridine

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Polyoxyethylene octyl ether phosphate potassium salt

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

2,3,4,5,6-Pentachloropyridine

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

3-Chloro-6-(trichloromethyl)pyridine

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

1,2-benzisothiazol-3(2H)-one

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Sodium chloride

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Propylene glycol

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

nitrapyrin (ISO)

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

solvent naphtha (petroleum), heavy arom.

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Decyl alcohol, ethoxylated, phosphated, potassium salt

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

4,6-dichloro-2-trichloromethyl pyridine

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Polyoxyethylene octyl ether phosphate potassium salt

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

2,3,4,5,6-Pentachloropyridine

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

1,2-benzisothiazol-3(2H)-one

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Sodium chloride

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Propylene glycol

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

SECTION 14: TRANSPORT INFORMATION

Classification for ROAD and Rail transport (ADR/RID):

14.1 UN number	UN 3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Nitrapyrin)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental hazards	Nitrapyrin
14.6 Special precautions for user	Hazard Identification Number: 90

Classification for SEA transport (IMO-IMDG):

14.1 UN number	UN 3082
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Nitrapyrin)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental hazards	Nitrapyrin
14.6 Special precautions for user	EmS: F-A, S-F
14.7 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

14.1 UN number	UN 3082
14.2 UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s.(Nitrapyrin)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	No data available.

Further information:

Marine Pollutants assigned UN number 3077 and 3082 in single or combination packaging containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass per single or inner packaging of 5 KG or less for solids may be transported as non-dangerous goods as provided in section 2.10.2.7 of IMDG code, IATA special provision A197, and ADR/RID special provision 375.

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.**

Listed in Regulation: ENVIRONMENTAL HAZARDS

Number in Regulation: E2

200 t

500 t

Listed in Regulation: Petroleum products: (a) gasolines and naphthas, (b) kerosenes (including jet fuels), (c) gas oils (including diesel fuels, home heating oils and gas oil blending streams),(d) heavy fuel oils (e) alternative fuels serving the same purposes and with similar properties as regards flammability and environmental hazards as the products referred to in points (a) to (d)

Number in Regulation: 34

2,500 t

25,000 t

15.2 Chemical safety assessment

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H319 Causes serious eye irritation.
- H331 Toxic if inhaled.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.
- H411 Toxic to aquatic life with long lasting effects.
- H412 Harmful to aquatic life with long lasting effects.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008

- Skin Sens. - 1 - H317 - Calculation method
- Eye Dam. - 1 - H318 - Calculation method
- Aquatic Chronic - 2 - H411 - Calculation method

Hazard Rating System

NFPA

Health	Flammability	Instability
2	1	0

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
Corteva OEL	Corteva Occupational Exposure Limit
Dow IHG	Dow Industrial Hygiene Guideline
GB EH40	UK. EH40 WEL - Workplace Exposure Limits
STEL	Short term exposure limit

TWA	8-hr TWA
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)
Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitization

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

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