

# SAFETY DATA SHEET

## DOW AGROSCIENCES SOUTHERN AFRICA PTY LTD

**Product name:** INDAR™ 50 EW

**Issue Date:** 04.09.2018

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DOW AGROSCIENCES SOUTHERN AFRICA PTY 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.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

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**Product name:** INDAR™ 50 EW

**Recommended use of the chemical and restrictions on use**

**Identified uses:** Plant Protection Product

### COMPANY IDENTIFICATION

DOW AGROSCIENCES SOUTHERN AFRICA PTY LTD

GROUND FLOOR MAGWA BUILDING

MAXWELL OFFICE PARK MAGWA CRESCENT

MIDRAND

1686

SOUTH AFRICA

**Customer Information Number:**

SDS@corteva.com

### EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** +32 3 575 55 55

**Local Emergency Contact:** +27 82 895 0621

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## 2. HAZARDS IDENTIFICATION

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### Classification of the substance or mixture

Skin irritation - Category 2 - H315

Eye irritation - Category 2 - H319

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

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

### Label elements

### Hazard pictograms



**Signal word: WARNING**

**Hazard statements**

H315 Causes skin irritation.  
 H319 Causes serious eye irritation.  
 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 soap and water.  
 P305 + P351 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 + P338  
 P501 Dispose of contents/container in accordance with applicable regulations.

**Supplemental information**

EUH401 To avoid risks to human health and the environment, comply with the instructions for use.

**Other hazards**

No data available

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

CASRN / EC-No. / Index-No.	Concentration	Component	Classification
CASRN 114369-43-6 EC-No. 406-140-2 Index-No. 608-023-00-3	5,0%	Fenbuconazole (ISO)	STOT RE - 2 - H373 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
CASRN 64742-94-5 EC-No. 265-198-5 Index-No. 649-424-00-3	> 40,0 - < 50,0 %	Solvent naphtha (petroleum), heavy aromatic	Asp. Tox. - 1 - H304 Aquatic Chronic - 2 - H411
CASRN 108-94-1 EC-No.	> 10,0 - < 20,0 %	Cyclohexanone	Flam. Liq. - 3 - H226 Acute Tox. - 4 - H302 Acute Tox. - 4 - H332

203-631-1 <b>Index-No.</b> 606-010-00-7			Acute Tox. - 3 - H311 Skin Irrit. - 2 - H315 Eye Dam. - 1 - H318
<b>CASRN</b> 57-55-6 <b>EC-No.</b> 200-338-0 <b>Index-No.</b> —	< 5,0 %	Propylene glycol	Not classified
<b>CASRN</b> 68953-96-8 <b>EC-No.</b> 273-234-6 <b>Index-No.</b> —	< 5,0 %	Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts	Acute Tox. - 4 - H312 Skin Irrit. - 2 - H315 Eye Dam. - 1 - H318 Aquatic Chronic - 2 - H411
<b>CASRN</b> 64742-95-6 <b>EC-No.</b> 265-199-0 <b>Index-No.</b> 649-356-00-4	< 5,0 %	Solvent naphtha (petroleum), light aromatic	Flam. Liq. - 3 - H226 STOT SE - 3 - H336 STOT SE - 3 - H335 Asp. Tox. - 1 - H304 Aquatic Chronic - 2 - H411
<b>CASRN</b> 91-20-3 <b>EC-No.</b> 202-049-5 <b>Index-No.</b> 601-052-00-2	< 1,0 %	Naphthalene	Acute Tox. - 4 - H302 Carc. - 2 - H351 Aquatic Acute - 1 - H400 Aquatic Chronic - 1 - H410
<b>CASRN</b> 64742-94-5 <b>EC-No.</b> 265-198-5 <b>Index-No.</b> 649-424-00-3	< 1,0 %	Heavy aromatic naphtha	STOT SE - 3 - H336 Asp. Tox. - 1 - H304 Aquatic Chronic - 2 - H411

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

## 4. FIRST AID MEASURES

### 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 person is not breathing, call an emergency responder or ambulance, then give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask etc). Call a poison control center or doctor for treatment advice. If breathing is difficult, oxygen should be administered by qualified personnel.

**Skin contact:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. Suitable emergency safety shower facility should be available in work area.

**Eye contact:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

**Ingestion:** Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

**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.

**Indication of any immediate medical attention and special treatment needed**

**Notes to physician:** Repeated excessive exposure may aggravate preexisting lung disease. Maintain adequate ventilation and oxygenation of the patient. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. If burn is present, treat as any thermal burn, after decontamination. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. Probable mucosal damage may contraindicate the use of gastric lavage. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

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## 5. FIREFIGHTING MEASURES

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**Suitable extinguishing media:** To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

**Unsuitable extinguishing media:** No data available

**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: Hydrogen chloride. Carbon monoxide. Carbon dioxide.

**Unusual Fire and Explosion Hazards:** This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation. Dense smoke is produced when product burns.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound

from venting safety device or discoloration of the container. Burning liquids may be extinguished by dilution with water. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special protective equipment for firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

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## 6. ACCIDENTAL RELEASE MEASURES

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**Personal precautions, protective equipment and emergency procedures:** Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

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## 7. HANDLING AND STORAGE

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**Precautions for safe handling:** Keep out of reach of children. Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Do not swallow. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

**Conditions for safe storage:** Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

**Storage stability**

**To maintain product quality, recommended storage temperature is > 0 °C**

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 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 aromatic	ACGIH	TWA	200 mg/m <sup>3</sup> , total hydrocarbon vapor
	Dow IHG	TWA	100 mg/m <sup>3</sup>
Cyclohexanone	Dow IHG	STEL	300 mg/m <sup>3</sup>
	ACGIH	TWA	20 ppm
	ACGIH	STEL	50 ppm
	ACGIH	TWA	SKIN
	ACGIH	STEL	SKIN
	Dow IHG	TWA	7,5 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	15 ppm
	Dow IHG	STEL	SKIN
	2000/39/EC	TWA	40,8 mg/m <sup>3</sup> 10 ppm
	2000/39/EC	STEL	81,6 mg/m <sup>3</sup> 20 ppm
	2000/39/EC	TWA	SKIN
	2000/39/EC	STEL	SKIN
	Propylene glycol	ZA OEL	TWA OEL-RL
ZA OEL		STEL OEL-RL	400 mg/m <sup>3</sup> 100 ppm
US WEEL		TWA	10 mg/m <sup>3</sup>
ZA OEL		TWA OEL-RL	10 mg/m <sup>3</sup>
ZA OEL		TWA OEL-RL	470 mg/m <sup>3</sup> 150 ppm particulate Vapour + particulates
Solvent naphtha (petroleum), light aromatic	ACGIH	TWA	200 mg/m <sup>3</sup> , total hydrocarbon vapor
	Dow IHG	TWA	100 mg/m <sup>3</sup>
Naphthalene	Dow IHG	STEL	300 mg/m <sup>3</sup>
	ACGIH	TWA	10 ppm
	ACGIH	TWA	SKIN
	Dow IHG	TWA	10 ppm
	Dow IHG	TWA	SKIN
	Dow IHG	STEL	15 ppm
	Dow IHG	STEL	SKIN
	91/322/EEC	TWA	50 mg/m <sup>3</sup> 10 ppm
	ZA OEL	TWA OEL-RL	50 mg/m <sup>3</sup> 10 ppm
	ZA OEL	STEL OEL-RL	75 mg/m <sup>3</sup> 15 ppm
Heavy aromatic naphtha	ACGIH	TWA	200 mg/m <sup>3</sup> , total hydrocarbon vapor
	Dow IHG	TWA	100 mg/m <sup>3</sup>
	Dow IHG	STEL	300 mg/m <sup>3</sup>

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.

#### Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Cyclohexanone	108-94-1	1,2-Cyclohexanediol	Urine	End of shift at end of workweek	80 mg/l	ACGIH BEI
		Cyclohexanol	Urine	End of shift (As soon as possible after exposure ceases)	8 mg/l	ACGIH BEI

#### Exposure controls

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. 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 chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 4 or higher (breakthrough time greater than 120 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 1 or higher (breakthrough time greater than 10 minutes according to EN 374) is recommended. 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:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**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, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

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

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Appearance

Physical state	Liquid.
Color	White to tan
Odor	Aromatic
Odor Threshold	No test data available
pH	7,3 1% pH Electrode (1% aqueous suspension)
Melting point/range	Not applicable
Freezing point	No test data available
Boiling point (760 mmHg)	No test data available
Flash point	<b>closed cup</b> 74 °C <i>Pensky-Martens Closed Cup ASTM D 93</i>
Evaporation Rate (Butyl Acetate = 1)	No test data available

### Flammability (solid, gas)

Lower explosion limit	No test data available
Upper explosion limit	No test data available
Vapor Pressure	No test data available
Relative Vapor Density (air = 1)	No test data available
Relative Density (water = 1)	1,01 at 20 °C <i>Digital Density Meter (Oscillating Coil)</i>
Water solubility	emulsifiable

### Partition coefficient: n-octanol/water

No data available

### Auto-ignition temperature

No test data available

### Decomposition temperature

No test data available

### Dynamic Viscosity

No test data available

### Kinematic Viscosity

No test data available

### Explosive properties

No

### Oxidizing properties

No significant increase (>5C) in temperature.

### Liquid Density

1,01 g/cm<sup>3</sup> at 20 °C *Digital density meter*

### Molecular weight

No data available

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

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** No dangerous reaction known under conditions of normal use.

**Chemical stability:** Thermally stable at typical use temperatures.



**Possibility of hazardous reactions:** Polymerization will not occur.

**Conditions to avoid:** Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

**Incompatible materials:** Avoid contact with: Strong acids. Strong oxidizers.

**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: Hydrogen chloride.

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## 11. TOXICOLOGICAL INFORMATION

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

### Acute toxicity

#### Acute oral toxicity

Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts. Swallowing may result in gastrointestinal irritation or ulceration.

As product: Single dose oral LD50 has not been determined. For similar material(s): LD50, Rat, > 2 000 mg/kg No deaths occurred at this concentration.

#### Acute dermal toxicity

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

As product: The dermal LD50 has not been determined. For similar material(s): LD50, Rabbit, > 2 000 mg/kg No deaths occurred at this concentration.

#### Acute inhalation toxicity

Prolonged excessive exposure to mist may cause adverse effects. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. May cause nausea and vomiting.  
As product: The LC50 has not been determined.

### Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.  
May cause drying and flaking of the skin.

### Serious eye damage/eye irritation

May cause severe eye irritation.  
May cause slight corneal injury.

### Sensitization

For similar material(s):  
Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

### Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Specific Target Organ Systemic Toxicity (Repeated Exposure)**

For the active ingredient(s):

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

Liver.

Based on information for component(s):

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

Central nervous system.

Kidney.

Liver.

Gastrointestinal tract.

Thyroid.

Urinary tract.

Lung.

Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

**Carcinogenicity**

For the active ingredient(s): Has caused cancer in laboratory animals. However, the effects are species specific and are not relevant to 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, has been shown to interfere with reproduction in females.

Cyclohexanone caused reduced growth and survival of offspring in an animal reproduction study. Dose levels producing this effect also caused central nervous system effects in parental animals. In animal studies, has been shown to interfere with reproduction in males. Effects have been seen only at doses that produced significant toxicity to the parent animals.

**Mutagenicity**

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

Based on information for component(s): In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative in some cases and positive in other cases.

**Aspiration Hazard**

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

**COMPONENTS INFLUENCING TOXICOLOGY:**

**Fenbuconazole (ISO)**

**Acute inhalation toxicity**

Prolonged excessive exposure to dust may cause adverse effects. Based on the available data, respiratory irritation was not observed.

LC50, Rat, male and female, 4 Hour, dust/mist, > 2,10 mg/l

Maximum attainable concentration. No deaths occurred at this concentration.

**Solvent naphtha (petroleum). heavy aromatic**

**Acute inhalation toxicity**

For similar material(s): LC50, Rat, 4 Hour, dust/mist, > 5,28 mg/l

**Cyclohexanone**

**Acute inhalation toxicity**

Vapor concentrations are attainable which could be hazardous on single exposure. May cause central nervous system effects. Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs.

LC50, Rat, 4 Hour, vapour, > 6,2 mg/l No deaths occurred at this concentration.

**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.

**Benzenesulfonic acid. mono-C11-13-branched alkyl derivs.. calcium salts**

**Acute inhalation toxicity**

The LC50 has not been determined.

**Solvent naphtha (petroleum). light aromatic**

**Acute inhalation toxicity**

Vapor concentrations are attainable which could be hazardous on single exposure. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

LC50, Rat, 4 Hour, vapour, > 10,2 mg/l

**Naphthalene**

**Acute inhalation toxicity**

Excessive exposure may cause irritation to upper respiratory tract (nose and throat). Excessive exposure may cause lung injury. Signs and symptoms of excessive exposure may include: Headache. Confusion. Sweating. Nausea and/or vomiting.

LC50, Rat, 4 Hour, vapour, > 0,41 mg/l The LC50 value is greater than the Maximum Attainable Concentration.

**Heavy aromatic naphtha**

**Acute inhalation toxicity**

Prolonged excessive exposure may cause adverse effects. May cause central nervous system effects. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

As product: The LC50 has not been determined.

For similar material(s): LC50, Rat, 4 Hour, vapour, > 4,688 mg/l

Maximum attainable concentration.

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## 12. ECOLOGICAL INFORMATION

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

### Toxicity

#### Acute toxicity to fish

Based on information for a similar material:

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

For similar material(s):

LC50, *Lepomis macrochirus* (Bluegill sunfish), static test, 96 Hour, 11 mg/l

For similar material(s):

LC50, *Oncorhynchus mykiss* (rainbow trout), flow-through test, 96 Hour, 5,6 mg/l

#### Acute toxicity to aquatic invertebrates

For similar material(s):

EC50, *Daphnia magna* (Water flea), static test, 48 Hour, 9,3 mg/l

#### Acute toxicity to algae/aquatic plants

For similar material(s):

ErC50, alga *Scenedesmus* sp., 72 Hour, Growth rate inhibition, 5,7 mg/l

#### Toxicity to Above Ground Organisms

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

Based on information for a similar material:

oral LD50, *Colinus virginianus* (Bobwhite quail), > 2250mg/kg bodyweight.

Based on information for a similar material:

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

Based on information for a similar material:

oral LD50, *Apis mellifera* (bees), 48 d, > 95µg/bee

#### Toxicity to soil-dwelling organisms

LC50, *Eisenia fetida* (earthworms), Based on information for a similar material:, 14 d, 451 mg/kg

### Persistence and degradability

#### Fenbuconazole (ISO)

**Biodegradability:** Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

10-day Window: Fail

**Biodegradation:** 17 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301D or Equivalent

**Photodegradation**

**Atmospheric half-life:** 13,1 Hour

**Solvent naphtha (petroleum). heavy aromatic**

**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

**Cyclohexanone**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

**Biodegradation:** 87 %

**Exposure time:** 14 d

**Method:** OECD Test Guideline 301C or Equivalent

10-day Window: Pass

**Biodegradation:** 90 - 100 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301F

**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

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

**Biodegradability:** Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

10-day Window: Fail

**Biodegradation:** 2,9 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301E or Equivalent

**Solvent naphtha (petroleum). light aromatic**

**Biodegradability:** For the major component(s): Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. For some component(s): 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.

#### **Naphthalene**

**Biodegradability:** Material is expected to be readily biodegradable.

#### **Heavy aromatic naphtha**

**Biodegradability:** Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).

#### **Bioaccumulative potential**

#### **Fenbuconazole (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):** 3,23 Measured

**Bioconcentration factor (BCF):** 160 Lepomis macrochirus (Bluegill sunfish) 28 Hour

#### **Solvent naphtha (petroleum), heavy aromatic**

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

#### **Cyclohexanone**

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

**Partition coefficient: n-octanol/water(log Pow):** 0,81 Measured

#### **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.

#### **Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

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

**Partition coefficient: n-octanol/water(log Pow):** 4,6 OECD Test Guideline 107 or Equivalent

#### **Solvent naphtha (petroleum), light aromatic**

**Bioaccumulation:** For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

#### **Naphthalene**

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

**Partition coefficient: n-octanol/water(log Pow):** 3,3 Measured

**Bioconcentration factor (BCF):** 40 - 300 Fish 28 d Measured

#### **Heavy aromatic naphtha**

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

#### Mobility in soil

##### **Fenbuconazole (ISO)**

Potential for mobility in soil is slight (Koc between 2000 and 5000).

**Partition coefficient (Koc):** 4425

##### **Solvent naphtha (petroleum), heavy aromatic**

No data available.

##### **Cyclohexanone**

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

**Partition coefficient (Koc):** 15 Estimated.

##### **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.

##### **Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

No relevant data found.

##### **Solvent naphtha (petroleum), light aromatic**

For the major component(s):

Potential for mobility in soil is low (Koc between 500 and 2000).

##### **Naphthalene**

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

**Partition coefficient (Koc):** 240 - 1300 Measured

##### **Heavy aromatic naphtha**

No relevant data found.

#### Results of PBT and vPvB assessment

##### **Fenbuconazole (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 aromatic**

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).

##### **Cyclohexanone**

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).

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

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), light aromatic**

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).

**Naphthalene**

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

**Heavy aromatic naphtha**

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).

**Other adverse effects****Fenbuconazole (ISO)**

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

**Solvent naphtha (petroleum), heavy aromatic**

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

**Cyclohexanone**

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.

**Benzenesulfonic acid, mono-C11-13-branched alkyl derivs., calcium salts**

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

**Solvent naphtha (petroleum), light aromatic**

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

**Naphthalene**

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

**Heavy aromatic naphtha**

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

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**13. DISPOSAL CONSIDERATIONS**

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**Disposal 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.



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**14. TRANSPORT INFORMATION**

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**Classification for ROAD and Rail transport:**

<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Fenbuconazole)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III
<b>Environmental hazards</b>	Fenbuconazole

**Classification for SEA transport (IMO-IMDG):**

<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.(Fenbuconazole)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III
<b>Marine pollutant</b>	Fenbuconazole
<b>Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code</b>	Consult IMO regulations before transporting ocean bulk

**Classification for AIR transport (IATA/ICAO):**

<b>Proper shipping name</b>	Environmentally hazardous substance, liquid, n.o.s.(Fenbuconazole)
<b>UN number</b>	UN 3082
<b>Class</b>	9
<b>Packing group</b>	III

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.

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**15. REGULATORY INFORMATION**

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**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

Classification and labeling have been performed according to Regulation (EC) No 1272/2008.

## 16. OTHER INFORMATION

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

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure if swallowed.
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.

### Revision

Identification Number: 296815 / A290 / Issue Date: 04.09.2018 / Version: 4.0

DAS Code: GF-1339

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

### Legend

2000/39/EC	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
91/322/EEC	Europe. Commission Directive 91/322/EEC on establishing indicative limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
Dow IHG	Dow Industrial Hygiene Guideline
SKIN	Absorbed via skin
STEL	Short term exposure limit
STEL OEL-RL	Short term occupational exposure limits - recommended limit
TWA	8-hr TWA
TWA OEL-RL	Long term occupational exposure limits - recommended limit
US WEEL	USA. Workplace Environmental Exposure Levels (WEEL)
ZA OEL	South Africa. Hazardous Chemical Substances Regulations, Occupational Exposure Limits
Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Dam.	Serious eye damage
Flam. Liq.	Flammable liquids

Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

### 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; AICS - Australian Inventory of Chemical Substances; 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; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; 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.

DOW AGROSCIENCES SOUTHERN AFRICA PTY LTD urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from

another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.  
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