

SAFETY DATA SHEET



Vindicate™

Version 1.0 Revision Date: 03/02/2022 SDS Number: 800080005046 Date of last issue: -
Date of first issue: 03/02/2022

Corteva Agriscience™ 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. This Safety Data Sheet adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. IDENTIFICATION

Product name : Vindicate™

Manufacturer or supplier's details

COMPANY IDENTIFICATION

Manufacturer/importer : CORTEVA AGRISCIENCE LLC
9330 ZIONSVILLE RD
INDIANAPOLIS, IN, 46268-1053
UNITED STATES

Customer Information Number : 800-992-5994

E-mail address : customerinformation@corteva.com

Emergency telephone : INFOTRAC (CONTRACT 84224).
800-992-5994 or 317-337-6009

Recommended use of the chemical and restrictions on use

Recommended use : Stabilizer

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity : Category 2

GHS label elements

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H351 Suspected of causing cancer.

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Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
nitrapyrin (ISO)	1929-82-4	17.67
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5	>= 20 - < 25
Propylene glycol	57-55-6	>= 3 - < 10
4,6-dichloro-2-trichloromethyl pyridine	1129-19-7	>= 1 - < 3
Sodium lignosulfonate, sulfomethylated	68512-34-5	>= 1 - < 3
Alcohols, C11-15-secondary, ethoxylated	68131-40-8	>= 1 - < 3
Alcohols, C12-14-secondary, ethoxylated	84133-50-6	>= 1 - < 3
2,3,4,5,6-Pentachloropyridine	2176-62-7	>= 0.3 - < 1
naphthalene	91-20-3	>= 0.1 - < 0.3
Balance	Not Assigned	> 30

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled : 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.

In case of skin contact : Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center

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- or doctor for treatment advice.
Suitable emergency safety shower facility should be available in work area.
- In case of 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.
- If swallowed : No emergency medical treatment necessary.
- Most important symptoms and effects, both acute and delayed : None known.
- Protection of first-aiders : 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.
- Notes to physician : If burn is present, treat as any thermal burn, after decontamination.
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.

SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray
Alcohol-resistant foam
- Unsuitable extinguishing media : None known.
- Specific hazards during fire fighting : Exposure to combustion products may be a hazard to health.
- 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:
Nitrogen oxides (NO_x)
Hydrogen chloride gas
Carbon oxides
- Specific extinguishing methods : Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.
Use water spray to cool unopened containers.
- Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
- 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.
- 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 over-pressurization of the container.
Keep in suitable, closed containers for disposal.
Wipe up with absorbent material (e.g. cloth, fleece).
See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Do not breathe vapors/dust.
Handle in accordance with good industrial hygiene and safety practice.
Smoking, eating and drinking should be prohibited in the application area.
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.
- Conditions for safe storage : Store in a closed container.
Keep in properly labeled containers.
Store in accordance with the particular national regulations.
- Materials to avoid : Strong oxidizing agents
- Packaging material : Unsuitable material: None known.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Ingredients with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified		TWA	100 mg/m ³	Corteva OEL
		STEL	300 mg/m ³	Corteva OEL
		TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
nitrapyrin (ISO)	1929-82-4	TWA (Inhalable fraction and vapor)	10 mg/m ³	ACGIH
		STEL (Inhalable fraction and vapor)	20 mg/m ³	ACGIH
		TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA (respirable fraction)	5 mg/m ³	OSHA Z-1
Propylene glycol	57-55-6	TWA	10 mg/m ³	US WEEL
2,3,4,5,6-Pentachloropyridine	2176-62-7	TWA	7 mg/m ³	Dow IHG
naphthalene	91-20-3	TWA	10 ppm	Dow IHG
		STEL	15 ppm	Dow IHG
		TWA	10 ppm	ACGIH
		TWA	10 ppm 50 mg/m ³	OSHA Z-1

Engineering measures : 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.

Personal protective equipment

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.

Hand protection

Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Styrene/butadiene rubber. Viton. Examples of acceptable glove barrier materials in-

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clude: Butyl rubber. Chlorinated polyethylene. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). 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.

Eye protection : Use chemical goggles.
Skin and body 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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid.

Color : Tan

Odor : Mild

Odor Threshold : No data available

pH : 8
Concentration: 1 %
Method: pH Electrode

Melting point/range : Not applicable

Freezing point : No data available

Boiling point/boiling range : No data available

Flash point : > 212 °F / > 100 °C
Method: Pensky-Martens Closed Cup ASTM D 93, closed cup

Evaporation rate : No data available

Flammability (solid, gas) : No data available

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : No data available

Relative vapor density : No data available

Density : 1.12 g/cm³ (68 °F / 20 °C)

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Method: Digital density meter

Solubility(ies)
Water solubility : No data available

Autoignition temperature : No data available

Viscosity
Viscosity, dynamic : 103 mPa.s (104 °F / 40 °C)
Method: OECD 114

Viscosity, kinematic : 91.6 mm²/s (104 °F / 40 °C)

Explosive properties : Not explosive

Oxidizing properties : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not classified as a reactivity hazard.

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

Possibility of hazardous reactions : Stable under recommended storage conditions.
No hazards to be specially mentioned.
None known.

Conditions to avoid : None known.

Incompatible materials : None.

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:
Nitrogen oxides (NO_x)
Hydrogen chloride gas
Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : Remarks: As product:
Single dose oral LD50 has not been determined.

LD50: > 5,000 mg/kg
Method: Estimated.
Remarks: For similar material(s):

Acute inhalation toxicity : LC50 (Rat, male and female): > 3.51 mg/l
Exposure time: 4 h
Test atmosphere: Aerosol
Symptoms: No deaths occurred at this concentration.

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Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: For similar material(s):

Remarks: Maximum attainable concentration.

Acute dermal toxicity : LD50: > 5,000 mg/kg
Method: Estimated.
Remarks: For similar material(s):

Components:

nitrapyrin (ISO):

Acute oral toxicity : LD50 (Rat, male): 1,072 mg/kg
LD50 (Rat, female): 1,231 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 3.51 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Symptoms: No deaths occurred at this concentration., The LC50 value is greater than the Maximum Attainable Concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit, male and female): 2,830 mg/kg

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Remarks: For similar material(s):

Acute inhalation toxicity : Remarks: 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.
Signs and symptoms of excessive exposure may include:
Sweating.
Nausea and/or vomiting.

LC50 (Rat): > 5.28 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: For similar material(s):

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: For similar material(s):

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Propylene glycol:

- Acute oral toxicity : LD50 (Rat): > 20,000 mg/kg
- Acute inhalation toxicity : LC50 (Rabbit): 317.042 mg/l
Exposure time: 2 h
Test atmosphere: dust/mist
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Mist may cause irritation of upper respiratory tract (nose and throat).
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

4,6-dichloro-2-trichloromethyl pyridine:

- Acute oral toxicity : LD50 (Rat): 1,000 - 2,000 mg/kg
Method: Estimated.

Sodium lignosulfonate, sulfomethylated:

- Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity
Remarks: For similar material(s):

Alcohols, C11-15-secondary, ethoxylated:

- Acute oral toxicity : LD50 (Rat): > 412 mg/kg
- Acute inhalation toxicity : Remarks: At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material may cause respiratory irritation and other effects.
Excessive exposure may cause lung injury.
- LC50 (Rat, male and female): 1.06 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rat, male and female): > 14,000 mg/kg

Alcohols, C12-14-secondary, ethoxylated:

- Acute oral toxicity : LD50 (Rat): > 412 mg/kg
- Acute inhalation toxicity : Remarks: At room temperature, exposure to vapor is minimal due to low volatility. Vapor from heated material may cause respiratory irritation and other effects.
Excessive exposure may cause lung injury.
- LC50 (Rat, male and female): 1.06 mg/l

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Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat, male and female): > 14,000 mg/kg

2,3,4,5,6-Pentachloropyridine:

Acute oral toxicity : LD50 (Rat, male): 435 mg/kg

naphthalene:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Lethal Dose (Humans): 5 - 15 grams
Method: Estimated.
Remarks: Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.
Ingestion of naphthalene by humans has caused hemolytic anemia.
Toxicity from swallowing may be greater in humans than in animals.
In humans, symptoms may include:
Confusion.
Lethargy.
Muscle spasms or twitches.
Convulsions.
Coma.

Acute inhalation toxicity : Remarks: 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): > 0.41 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Symptoms: The LC50 value is greater than the Maximum Attainable Concentration.
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 2,500 mg/kg
Remarks: Human case reports suggest Naphthalene may be absorbed through the skin in toxic amounts, especially in children.

LD50 (Rabbit): > 2,500 mg/kg

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Skin corrosion/irritation**Product:**

Species : Rabbit
Result : Mild skin irritation

Components:**nitrapyrin (ISO):**

Species : Rabbit
Result : No skin irritation

Propylene glycol:

Species : Rabbit
Result : No skin irritation

4,6-dichloro-2-trichloromethyl pyridine:

Result : Skin irritation

Alcohols, C11-15-secondary, ethoxylated:

Result : Skin irritation

Alcohols, C12-14-secondary, ethoxylated:

Result : Skin irritation

2,3,4,5,6-Pentachloropyridine:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation**Product:**

Species : Rabbit
Result : No eye irritation

Components:**nitrapyrin (ISO):**

Species : Rabbit
Result : Eye irritation

Propylene glycol:

Species : Rabbit
Result : No eye irritation

4,6-dichloro-2-trichloromethyl pyridine:

Result : Eye irritation

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Sodium lignosulfonate, sulfomethylated:

Species : Rabbit
Result : Eye irritation

Alcohols, C11-15-secondary, ethoxylated:

Result : Corrosive

Alcohols, C12-14-secondary, ethoxylated:

Result : Corrosive

2,3,4,5,6-Pentachloropyridine:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitization**Product:**

Species : Mouse
Result : Does not cause skin sensitization.
Remarks : For similar material(s):

Components:**nitrapyrin (ISO):**

Species : Guinea pig
Result : May cause sensitization by skin contact.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

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

Remarks : For respiratory sensitization:
No relevant data found.

Propylene glycol:

Species : human
Assessment : Does not cause skin sensitization.

4,6-dichloro-2-trichloromethyl pyridine:

Remarks : Not expected to be a skin sensitizer based on Structure-Activity Relationship (SAR).

Remarks : For respiratory sensitization:
No relevant data found.

Alcohols, C11-15-secondary, ethoxylated:

Assessment : Does not cause skin sensitization.

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Remarks : Did not cause allergic skin reactions when tested in humans.

Remarks : For respiratory sensitization:
No relevant data found.

Alcohols, C12-14-secondary, ethoxylated:

Remarks : Did not cause allergic skin reactions when tested in humans.

Remarks : For respiratory sensitization:
No relevant data found.

2,3,4,5,6-Pentachloropyridine:

Assessment : May cause sensitization by skin contact.

naphthalene:

Assessment : Does not cause skin sensitization.

Remarks : Skin contact may cause an allergic skin reaction in a small proportion of individuals.
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity**Components:****nitrapyrin (ISO):**

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Germ cell mutagenicity - Assessment : For similar material(s);, In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

Propylene glycol:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative., Animal genetic toxicity studies were negative.

2,3,4,5,6-Pentachloropyridine:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative.

naphthalene:

Germ cell mutagenicity - Assessment : In vitro genetic toxicity studies were negative in some cases and positive in other cases.

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Carcinogenicity**Components:****nitrapyrin (ISO):**

Carcinogenicity - Assessment : 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.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Carcinogenicity - Assessment : Contains naphthalene which has caused cancer in some laboratory animals., However, the relevance of this to humans is unknown.

Propylene glycol:

Carcinogenicity - Assessment : Did not cause cancer in laboratory animals.

naphthalene:

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

Has caused cancer in some laboratory animals., In humans, there is limited evidence of cancer in workers involved in naphthalene production. Limited oral studies in rats were negative.

IARC Group 2B: Possibly carcinogenic to humans
naphthalene 91-20-3

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP Reasonably anticipated to be a human carcinogen
naphthalene 91-20-3

Reproductive toxicity**Components:****nitrapyrin (ISO):**

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction. Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Exposures having no effect on the mother should have no effect on the fetus., Did not cause birth defects in laboratory animals.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction. For similar material(s);, Did not cause birth defects or any other fetal effects in laboratory animals.

Propylene glycol:

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Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction., In animal studies, did not interfere with fertility.
Did not cause birth defects or any other fetal effects in laboratory animals.

2,3,4,5,6-Pentachloropyridine:

Reproductive toxicity - Assessment : Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

naphthalene:

Reproductive toxicity - Assessment : Available data are inadequate to determine effects on reproduction.
Did not cause birth defects in laboratory animals.

STOT-single exposure

Product:

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

Components:

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

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

Propylene glycol:

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

4,6-dichloro-2-trichloromethyl pyridine:

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

Alcohols, C11-15-secondary, ethoxylated:

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

Alcohols, C12-14-secondary, ethoxylated:

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

2,3,4,5,6-Pentachloropyridine:

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

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naphthalene:

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

Repeated dose toxicity**Components:****nitrapyrin (ISO):**

Remarks : In animals, effects have been reported on the following organs:
Kidney.
Liver.
Blood.
Female reproductive organs.
Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Remarks : Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Propylene glycol:

Remarks : In rare cases, repeated excessive exposure to propylene glycol may cause central nervous system effects.

4,6-dichloro-2-trichloromethyl pyridine:

Remarks : No relevant data found.

Sodium lignosulfonate, sulfomethylated:

Remarks : For similar material(s):
Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Alcohols, C11-15-secondary, ethoxylated:

Remarks : Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Alcohols, C12-14-secondary, ethoxylated:

Remarks : Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

2,3,4,5,6-Pentachloropyridine:

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

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naphthalene:

Remarks : Observations in animals include:
Respiratory effects.
Excessive exposure may cause hemolysis, thereby impairing the blood's ability to transport oxygen.
Cataracts and other eye effects have been reported in humans repeatedly exposed to naphthalene vapor or dust.
Ingestion of naphthalene by humans has caused hemolytic anemia.

Aspiration toxicity**Product:**

No aspiration toxicity classification

Components:**nitrapyrin (ISO):**

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

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

May be fatal if swallowed and enters airways.

Propylene glycol:

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

4,6-dichloro-2-trichloromethyl pyridine:

Based on available information, aspiration hazard could not be determined.

Sodium lignosulfonate, sulfomethylated:

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

Alcohols, C11-15-secondary, ethoxylated:

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

Alcohols, C12-14-secondary, ethoxylated:

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

2,3,4,5,6-Pentachloropyridine:

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

naphthalene:

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

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:**nitrapyrin (ISO):**

- | | | |
|---|---|---|
| Toxicity to fish | : | <p>LC50 (Lepomis macrochirus (Bluegill sunfish)): 3.4 - 7.9 mg/l
 Exposure time: 96 h
 Test Type: static test
 Method: OECD Test Guideline 203 or Equivalent</p> <p>LC50 (Rainbow trout (Oncorhynchus mykiss)): 4 mg/l
 Exposure time: 96 h
 Test Type: static test</p> |
| Toxicity to daphnia and other aquatic invertebrates | : | <p>EC50 (eastern oyster (Crassostrea virginica)): 1.8 mg/l
 Exposure time: 96 h
 Test Type: flow-through test</p> <p>LC50 (Daphnia magna (Water flea)): 2.2 mg/l
 Exposure time: 48 h
 Test Type: flow-through test</p> |
| Toxicity to algae/aquatic plants | : | <p>ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.7 mg/l
 End point: Growth rate inhibition
 Exposure time: 72 h</p> |
| Toxicity to fish (Chronic toxicity) | : | <p>NOEC (Fathead minnow (Pimephales promelas)): 2.87 mg/l
 Exposure time: 34 d</p> |
| Toxicity to soil dwelling organisms | : | <p>LC50 (Eisenia fetida (earthworms)): 209 mg/kg
 Exposure time: 15 d
 End point: survival</p> |
| Toxicity to terrestrial organisms | : | <p>Remarks: 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).</p> <p>oral LD50 (Anas platyrhynchos (Mallard duck)): 2708 mg/kg bodyweight.</p> <p>dietary LC50 (Anas platyrhynchos (Mallard duck)): 1466 mg/kg diet.</p> <p>dietary LC50 (Coturnix japonica (Japanese quail)): 820 mg/kg diet.</p> <p>oral LD50 (Apis mellifera (bees)): > 100 µg/bee
 Exposure time: 48 h</p> <p>contact LD50 (Apis mellifera (bees)): > 100 µg/bee
 Exposure time: 48 h</p> |

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Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Toxicity to fish : Remarks: For similar material(s):
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).

EC50 (Oncorhynchus mykiss (rainbow trout)): 3.6 mg/l
Exposure time: 96 h

LL50 (Oncorhynchus mykiss (rainbow trout)): 2 - 5 mg/l
Exposure time: 96 h
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.1 mg/l
Exposure time: 48 h
Test Type: semi-static test
Remarks: For similar material(s):

EL50 (Daphnia magna (Water flea)): 1.4 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 7.9 mg/l
Exposure time: 72 h
Remarks: For similar material(s):

EL50 (Pseudokirchneriella subcapitata (green algae)): 1 - 3 mg/l
End point: Growth inhibition (cell density reduction)
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

Propylene glycol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 40,613 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : LC50 (Ceriodaphnia dubia (water flea)): 18,340 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

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Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 19,000 mg/l
End point: Growth rate inhibition
Exposure time: 96 h
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 13,020 mg/l
End point: number of offspring
Exposure time: 7 d
Test Type: semi-static test

Toxicity to microorganisms : NOEC (Pseudomonas putida): > 20,000 mg/l
Exposure time: 18 h

Alcohols, C11-15-secondary, ethoxylated:

Toxicity to fish : Remarks: 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).

LC50 (Pimephales promelas (fathead minnow)): 3.2 - 3.6 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.3 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to microorganisms : EC50 (Bacteria): > 1,000 mg/l
Exposure time: 16 h

Alcohols, C12-14-secondary, ethoxylated:

Toxicity to fish : Remarks: 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).

LC50 (Pimephales promelas (fathead minnow)): 3.2 - 3.6 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.3 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to microorganisms : EC50 (Bacteria): > 1,000 mg/l
Exposure time: 16 h

2,3,4,5,6-Pentachloropyridine:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 0.47 mg/l
Exposure time: 96 h
Test Type: flow-through test

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Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 4 mg/l
 End point: Growth rate inhibition
 Exposure time: 96 h
 Test Type: static test

Ecotoxicology Assessment

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

naphthalene:

Toxicity to fish : Remarks: Material is highly toxic to aquatic organisms on an acute basis (LC50/EC50 between 0.1 and 1 mg/L in the most sensitive species tested).

LC50 (Oncorhynchus mykiss (rainbow trout)): 0.11 mg/l
 Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.6 - 24.1 mg/l
 Exposure time: 48 h
 Test Type: static test

Toxicity to algae/aquatic plants : ErC50 (Skeletonema costatum (marine diatom)): 0.4 mg/l
 Exposure time: 72 h
 Test Type: Growth rate inhibition

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC (Other): 0.37 mg/l
 End point: mortality
 Exposure time: 40 d
 Test Type: flow-through

M-Factor (Chronic aquatic toxicity) : 1

Ecotoxicology Assessment

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Persistence and degradability**Components:****nitrapyrin (ISO):**

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

ThOD : 0.97 kg/kg

Stability in water : Test Type: Hydrolysis
 Degradation half life (half-life): 186 h (25 °C) pH: 5

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Test Type: Hydrolysis
 Degradation half life (half-life): 173 - 233 h (25 °C) pH: 7

Test Type: Hydrolysis
 Degradation half life (half-life): 129 h (25 °C) pH: 9

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Biodegradability : Result: Not biodegradable.
 Remarks: 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

Propylene glycol:

Biodegradability : aerobic
 Result: Readily biodegradable.
 Biodegradation: 81 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301F or Equivalent
 Remarks: 10-day Window: Pass

Biodegradation: 96 %
 Exposure time: 64 d
 Method: OECD Test Guideline 306 or Equivalent
 Remarks: 10-day Window: Not applicable

Biochemical Oxygen Demand (BOD) : 69.000 %
 Incubation time: 5 d

70.000 %
 Incubation time: 10 d

86.000 %
 Incubation time: 20 d

Chemical Oxygen Demand (COD) : 1.53 kg/kg
 ThOD : 1.68 kg/kg

Photodegradation : Rate constant: 1.28E-11 cm³/s
 Method: Estimated.

Sodium lignosulfonate, sulfomethylated:

Biodegradability : Result: Not readily biodegradable.

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Alcohols, C11-15-secondary, ethoxylated:

Biodegradability : Result: Readily biodegradable.
Remarks: For similar material(s):
Material is readily biodegradable. Passes OECD test(s) for
ready biodegradability.

Biodegradation: > 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: For similar material(s):
10-day Window: Not applicable

Chemical Oxygen Demand (COD) : 2.07 kg/kg
ThOD : 2.10 kg/kg

Alcohols, C12-14-secondary, ethoxylated:

Biodegradability : Result: Readily biodegradable.
Remarks: For similar material(s):
Material is readily biodegradable. Passes OECD test(s) for
ready biodegradability.

Biodegradation: > 60 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: 10-day Window: Not applicable

Biochemical Oxygen Demand (BOD) : 22 - 33 %
Incubation time: 5 d

40 - 53 %
Incubation time: 10 d

59 - 82 %
Incubation time: 20 d

Chemical Oxygen Demand (COD) : 2.07 kg/kg
ThOD : 2.10 kg/kg

2,3,4,5,6-Pentachloropyridine:

ThOD : 0.64 kg/kg

naphthalene:

Biodegradability : Remarks: Biodegradation under aerobic static laboratory conditions is high (BOD₂₀ or BOD₂₈/ThOD > 40%).

Biochemical Oxygen Demand (BOD) : 57.000 %
Incubation time: 5 d

71.000 %
Incubation time: 10 d

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71.000 %
Incubation time: 20 d

ThOD : 3.00 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Concentration: 1,500,000 1/cm³
Rate constant: 2.16E-11 cm³/s
Method: Estimated.

Bioaccumulative potential**Components:****nitrapyrin (ISO):**

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Bioconcentration factor (BCF): < 85
Exposure time: 30 d
Method: Measured

Partition coefficient: n-octanol/water : log Pow: 3.324
Method: Measured
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Partition coefficient: n-octanol/water : Remarks: For similar material(s):
Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Propylene glycol:

Bioaccumulation : Bioconcentration factor (BCF): 0.09
Method: Estimated.

Partition coefficient: n-octanol/water : log Pow: -1.07
Method: Measured
Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

4,6-dichloro-2-trichloromethyl pyridine:

Partition coefficient: n-octanol/water : Remarks: No relevant data found.

Sodium lignosulfonate, sulfomethylated:

Partition coefficient: n-octanol/water :
Remarks: For similar material(s):
Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Alcohols, C11-15-secondary, ethoxylated:

Bioaccumulation : Bioconcentration factor (BCF): 29

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Method: Estimated.

Partition coefficient: n-octanol/water : log Pow: 2.72
Method: Estimated.

Alcohols, C12-14-secondary, ethoxylated:

Bioaccumulation : Bioconcentration factor (BCF): 29
Method: Estimated.

Partition coefficient: n-octanol/water : log Pow: 2.72
Method: Estimated.

2,3,4,5,6-Pentachloropyridine:

Partition coefficient: n-octanol/water :
log Pow: 3.53
Method: Measured
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

naphthalene:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 40 - 300
Exposure time: 28 d
Method: Measured

Partition coefficient: n-octanol/water : log Pow: 3.3
Method: Measured
Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Balance:

Partition coefficient: n-octanol/water : Remarks: No relevant data found.

Mobility in soil

Components:

nitrapyrin (ISO):

Distribution among environmental compartments : Koc: 321
Method: Measured
Remarks: Potential for mobility in soil is medium (Koc between 150 and 500).

Stability in soil : Dissipation time: 3 - 35 d

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Distribution among environmental compartments : Remarks: No data available.

Propylene glycol:

Distribution among environmental compartments : Koc: < 1

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mental compartments Method: Estimated.
 Remarks: 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).

4,6-dichloro-2-trichloromethyl pyridine:

Distribution among environmental compartments : Remarks: No relevant data found.

Sodium lignosulfonate, sulfomethylated:

Distribution among environmental compartments : Remarks: Expected to be relatively immobile in soil (Koc > 5000).

Alcohols, C11-15-secondary, ethoxylated:

Distribution among environmental compartments : Remarks: No specific, relevant data available for assessment.

Alcohols, C12-14-secondary, ethoxylated:

Distribution among environmental compartments : Remarks: No specific, relevant data available for assessment.

naphthalene:

Distribution among environmental compartments : Koc: 240 - 1300
 Method: Measured
 Remarks: Potential for mobility in soil is medium (Koc between 150 and 500).

Balance:

Distribution among environmental compartments : Remarks: No relevant data found.

Other adverse effects**Components:****nitrapyrin (ISO):**

Results of PBT and vPvB assessment : 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).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified:

Results of PBT and vPvB assessment : 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).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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Propylene glycol:

Results of PBT and vPvB assessment : 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).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

4,6-dichloro-2-trichloromethyl pyridine:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Sodium lignosulfonate, sulfomethylated:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Alcohols, C11-15-secondary, ethoxylated:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Alcohols, C12-14-secondary, ethoxylated:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

2,3,4,5,6-Pentachloropyridine:

Results of PBT and vPvB assessment : 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).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

naphthalene:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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Balance:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Ozone-Depletion Potential : Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

SECTION 13. DISPOSAL CONSIDERATIONS
Disposal methods

Waste from residues : 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.

SECTION 14. TRANSPORT INFORMATION
International Regulations**UNRTDG**

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Nitrapyrin)

Class : 9

Packing group : III

Labels : 9

IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s. (Nitrapyrin)

Class : 9

Packing group : III

Labels : Miscellaneous

Packing instruction (cargo aircraft) : 964

Packing instruction (passenger aircraft) : 964

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IMDG-Code

UN number : UN 3082
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Nitrapyrin)
Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes
Remarks : Stowage category A

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

Not regulated as a dangerous good

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 5L 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.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

SARA 311/312 Hazards : Carcinogenicity

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

nitrapyrin (ISO) 1929-82-4 >= 10 - < 20 %

naphthalene 91-20-3 >= 0.1 - < 1 %

US State Regulations

Pennsylvania Right To Know

Solvent naphtha (petroleum), heavy arom.; Kerosine — unspecified	64742-94-5
nitrapyrin (ISO)	1929-82-4
Propylene glycol	57-55-6

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California Prop. 65

WARNING: This product can expose you to chemicals including nitrapyrin (ISO), naphthalene, 1,4-dioxane, ethylene oxide, formaldehyde, acetaldehyde, which is/are known to the State of California to cause cancer, and nitrapyrin (ISO), ethylene oxide, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

TSCA : Product contains substance(s) not listed on TSCA inventory.

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number : 62719-684

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

CAUTION

SECTION 16. OTHER INFORMATION

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.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
Corteva OEL : Corteva Occupational Exposure Limit
Dow IHG : Dow Industrial Hygiene Guideline
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)
ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit
Corteva OEL / STEL : Short term exposure limit
Corteva OEL / TWA : Time weighted average
Dow IHG / TWA : Time Weighted Average (TWA):
Dow IHG / STEL : Short term exposure limit
Dow IHG / TWA : Time weighted average
OSHA Z-1 / TWA : 8-hour time weighted average
US WEEL / TWA : 8-hr TWA

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AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; 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

Revision Date : 03/02/2022

Product code: GF-3181

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / EN