SAFETY DATA SHEET
according to the OSHA Hazard Communication Standard

Snapshot® 2.5 TG

Version	Revision Date:	SDS Number:	Date of last issue: 09/12/2023
1.2	09/12/2023	800080003390	Date of first issue: 01/13/2022

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 : Snapshot® 2.5 TG

Manufacturer or supplier's details

COMPANY IDENTIFICATION

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

Customer Information Number : 1-800-258-3033
E-mail address : customerinformation@corteva.com

Emergency telephone : INFOTRAC (CONTRACT 84224).

+1 800-992-5994 or +1 317-337-6009

Recommended use of the chemical and restrictions on use

Recommended use : End use herbicide product

SECTION 2. HAZARDS IDENTIFICATION

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

Carcinogenicity : Category 1A

Specific target organ toxicity - repeated exposure (Inhalation) : Category 1 (Lungs)

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H350 May cause cancer.
H372 Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
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)
isoxaben (ISO)	82558-50-7	0.5
trifluralin (ISO) (containing <0.5 ppm NPDA)	1582-09-8	2
Quartz	14808-60-7	>= 3 - < 10
Balance	Not Assigned	> 80

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.
If breathing is difficult, oxygen should be administered by qualified personnel.

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 or doctor for treatment advice.
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. May cause injury due to mechanical action.
If swallowed	:	Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Never give anything by mouth to an unconscious person.
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	:	Maintain adequate ventilation and oxygenation of the patient. 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 Foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	None known.
Specific hazards during fire fighting	:	Exposure to combustion products may be a hazard to health. Do not allow run-off from fire fighting to enter drains or water courses.

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 (NOx) Hydrogen fluoride Carbon oxides
Specific extinguishing methods	:	Remove undamaged containers from fire area if it is safe to do so. Evacuate area. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Avoid dust formation. Avoid breathing dust. Use personal protective equipment. 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. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained. Prevent from entering into soil, ditches, sewers,underwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up	:	Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in. Pick up and arrange disposal without creating dust. Recovered material should be stored in a vented container. The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container. Keep in suitable, closed containers for disposal.

Sweep up or vacuum up spillage and collect in suitable container for disposal.
See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

Local/Total ventilation : Use with local exhaust ventilation.

Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.
Avoid formation of respirable particles.
Do not breathe vapors/dust.
Handle in accordance with good industrial hygiene and safety practice.
Avoid exposure - obtain special instructions before use.
Smoking, eating and drinking should be prohibited in the application area.
Do not get on skin or clothing.
Do not swallow.
Avoid contact with eyes.
Keep container tightly closed.
Take care to prevent spills, waste and minimize release to the environment.
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Conditions for safe storage : Store in a closed container.
Prevent unauthorized access.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in properly labeled containers.
Store in accordance with the particular national regulations.

Materials to avoid : Strong oxidizing agents
Organic peroxides
Explosives
Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Quartz	14808-60-7	TWA (Respirable dust)	0.05 mg/m3	OSHA Z-1
		TWA (respirable)	10 mg/m3 / %SiO2+2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO2+5	OSHA Z-3
		TWA (Res-	0.025 mg/m3	ACGIH

		pirable particulate matter)	(Silica)	
		TWA (respirable dust fraction)	0.1 mg/m3	OSHA P0
		PEL (respirable)	0.05 mg/m3	OSHA CARC

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 when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: 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 safety glasses (with side shields).
If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles.

Skin and body protection : Wear clean, body-covering clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Granules.

Color	:	light yellow
Odor	:	Aromatic
Odor Threshold	:	No data available
pH	:	7.5 (50% dispersion)
Melting point/range	:	No data available
Freezing point		Not applicable
Boiling point/boiling range	:	Not applicable
Flash point	:	Method: closed cup Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	No
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Density	:	Not applicable
Bulk density	:	0.70 g/cm3 (74.1 °F / 23.4 °C) Method: Loose Volumetric
Solubility(ies) Water solubility	:	No data available
Autoignition temperature	:	> 999 °F / > 537 °C
Viscosity Viscosity, dynamic	:	Not applicable
Explosive properties	:	No
Oxidizing properties	:	No significant increase (>5C) in temperature.

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.
Conditions to avoid	:	None known.
Incompatible materials	:	Strong acids Strong bases
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 (NOx) Hydrogen fluoride Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat): > 2,500 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute oral toxicity Remarks: Information source: Internal study report
Acute dermal toxicity	:	LD50 (Rabbit, male and female): > 5,000 mg/kg Remarks: Information source: Internal study report

Components:

isoxaben (ISO):

Acute oral toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg
Acute inhalation toxicity	:	Remarks: Prolonged excessive exposure to dust may cause adverse effects. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed. LC50 (Rat, male and female): > 2.93 mg/l

Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

Symptoms: No deaths occurred at this concentration.
Remarks: Maximum attainable concentration.

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

trifluralin (ISO) (containing <0.5 ppm NPDA):

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : Remarks: Vapors are unlikely due to physical properties.
No adverse effects are anticipated from single exposure to dust.
Based on the available data, respiratory irritation was not observed.

LC50 (Rat): > 4.8 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

Skin corrosion/irritation

Product:

Species : Rabbit
Result : No skin irritation

Components:

isoxaben (ISO):

Species : Rabbit
Result : No skin irritation

trifluralin (ISO) (containing <0.5 ppm NPDA):

Result : No skin irritation

Quartz:

Result : No skin irritation

Serious eye damage/eye irritation

Product:

Species : Rabbit
Result : No eye irritation

Components:

isoxaben (ISO):

Species : Rabbit
Result : No eye irritation

trifluralin (ISO) (containing <0.5 ppm NPDA):

Result : No eye irritation

Quartz:

Result : No eye irritation

Respiratory or skin sensitization

Product:

Species : Guinea pig
Assessment : Does not cause skin sensitization.

Components:

isoxaben (ISO):

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

Remarks : For respiratory sensitization:
No relevant data found.

trifluralin (ISO) (containing <0.5 ppm NPDA):

Assessment : May cause sensitization by skin contact.
Remarks : Skin contact may cause an allergic skin reaction.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Components:

isoxaben (ISO):

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

trifluralin (ISO) (containing <0.5 ppm NPDA):

Germ cell mutagenicity - Assessment : In vivo tests did not show mutagenic effects

In vitro genetic toxicity studies were predominantly negative., Animal genetic toxicity studies were predominantly negative.

Quartz:

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

Carcinogenicity

Components:

isoxaben (ISO):

Carcinogenicity - Assessment : An increase in nonmalignant liver tumors was observed with isoxaben in one of two species tested.

trifluralin (ISO) (containing <0.5 ppm NPDA):

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

A low incidence of urinary tract tumors was seen in only 1 of 5 chronic studies in rats with trifluralin. Trifluralin is not anticipated to be a carcinogenic risk to man.

Quartz:

Carcinogenicity - Assessment : Human carcinogen.

Has caused cancer in humans., Has caused cancer in laboratory animals.

IARC	Group 1: Carcinogenic to humans Quartz (Silica dust, crystalline)	14808-60-7
OSHA	OSHA specifically regulated carcinogen Quartz (crystalline silica)	14808-60-7
NTP	Known to be human carcinogen Quartz (Silica, Crystalline (Respirable Size))	14808-60-7

Reproductive toxicity

Components:

isoxaben (ISO):

Reproductive toxicity - Assessment : In animal studies, has been shown to interfere with reproduction in females., Effects have been seen only at doses that produced significant toxicity to the parent animals.
Has caused birth defects in laboratory animals only at doses toxic to the mother.

trifluralin (ISO) (containing <0.5 ppm NPDA):

Reproductive toxicity - Assessment : Animal testing did not show any effects on fertility.

In animal studies, did not interfere with reproduction.
Has been toxic to the fetus in laboratory animals at doses toxic to the mother., Did not cause birth defects in laboratory animals.

Quartz:

Reproductive toxicity - Assessment : For similar material(s):, Did not cause birth defects or any other fetal effects in laboratory animals.

STOT-single exposure

Product:

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

Components:

isoxaben (ISO):

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

trifluralin (ISO) (containing <0.5 ppm NPDA):

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

Quartz:

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

STOT-repeated exposure

Components:

isoxaben (ISO):

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Quartz:

Routes of exposure : Inhalation

Target Organs : Lungs
Assessment : Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

isoxaben (ISO):
Remarks : In animals, effects have been reported on the following organs:
Liver.
Kidney.

trifluralin (ISO) (containing <0.5 ppm NPDA):
Remarks : In animals, effects have been reported on the following organs:
Kidney.
Blood.
Liver.
Thyroid.

Quartz:
Remarks : In humans, effects have been reported on the following organs:
Kidney.
Repeated excessive exposure to crystalline silica may cause silicosis, a progressive and disabling disease of the lungs.

Aspiration toxicity

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

Components:

isoxaben (ISO):
Based on physical properties, not likely to be an aspiration hazard.

trifluralin (ISO) (containing <0.5 ppm NPDA):
Based on physical properties, not likely to be an aspiration hazard.

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 230 mg/l Exposure time: 96 h Test Type: semi-static test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia pulex (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1,000 mg/l Exposure time: 96 h
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 10,000 mg/kg Exposure time: 14 d End point: survival
Toxicity to terrestrial organisms	:	Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). oral LD50 (Colinus virginianus (Bobwhite quail)): > 2000 mg/kg bodyweight.

Components:

isoxaben (ISO):

Toxicity to fish	:	Remarks: Material is very highly toxic to aquatic organisms on an acute basis (LC50/EC50 <0.1 mg/L in the most sensitive species). LC50 (Oncorhynchus mykiss (rainbow trout)): 1.2 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 or Equivalent Remarks: The LC50 value is above the water solubility. LC50 (Cyprinodon variegatus (sheepshead minnow)): > 0.87 mg/l Exposure time: 96 h Test Type: static test Method: OECD Test Guideline 203 or Equivalent Remarks: The LC50 value is above the water solubility.
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1.3 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	EbC50 (Lemna minor (duckweed)): 0.011 mg/l End point: Biomass

Exposure time: 7 d
Test Type: static test
Method: OECD Test Guideline 201 or Equivalent

ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1.2 mg/l
End point: Growth rate inhibition
Exposure time: 72 h
Test Type: static test

ErC50 (Skeletonema costatum (marine diatom)): > 0.49 mg/l
Exposure time: 72 h
Test Type: static test

M-Factor (Acute aquatic toxicity) : 10

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 0.4 mg/l
End point: growth
Exposure time: 33 d
Test Type: semi-static test

LOEC (Pimephales promelas (fathead minnow)): > 0.40 mg/l
End point: growth
Exposure time: 33 d
Test Type: semi-static test

MATC (Maximum Acceptable Toxicant Level) (Pimephales promelas (fathead minnow)): > 0.40 mg/l
End point: growth
Exposure time: 33 d
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.69 mg/l
End point: growth
Exposure time: 21 d
Test Type: static test
Method: OECD Test Guideline 211 or Equivalent

LOEC (Daphnia magna (Water flea)): 1.01 mg/l
End point: growth
Exposure time: 21 d
Test Type: static test
Method: OECD Test Guideline 211 or Equivalent

MATC (Maximum Acceptable Toxicant Level) (Daphnia magna (Water flea)): 0.85 mg/l
End point: growth
Exposure time: 21 d
Test Type: static test
Method: OECD Test Guideline 211 or Equivalent

NOEC (saltwater mysid Mysidopsis bahia): 0.841 mg/l
Exposure time: 28 d

Test Type: flow-through test

LOEC (saltwater mysid Mysidopsis bahia): > 0.841 mg/l
Exposure time: 28 d
Test Type: flow-through test

NOEC (Midge (Chironomus riparius)): 32 mg/l
End point: mortality
Exposure time: 28 d
Test Type: static test
Method: OECD Test Guideline 211 or Equivalent

LOEC (Midge (Chironomus riparius)): 64 mg/l
End point: mortality
Exposure time: 28 d
Test Type: static test
Method: OECD Test Guideline 211 or Equivalent

MATC (Maximum Acceptable Toxicant Level) (Midge (Chironomus riparius)): 48 mg/l
End point: mortality
Exposure time: 28 d
Test Type: static test
Method: OECD Test Guideline 211 or Equivalent

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to microorganisms : EC50 (activated sludge): > 100 mg/l
End point: Respiration rates.
Exposure time: 3 h
Test Type: Respiration inhibition

Toxicity to soil dwelling organisms : LC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
Exposure time: 14 d

Toxicity to terrestrial organisms : Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)., Material is moderately toxic to birds on a dietary basis (LC50 between 501 and 1000 ppm).

oral LD50 (Colinus virginianus (Bobwhite quail)): > 2000 mg/kg bodyweight.
Exposure time: 14 d

LC50 (Colinus virginianus (Bobwhite quail)): > 937 mg/kg diet.
Exposure time: 8 d

oral LD50 (Apis mellifera (bees)): > 100 micrograms/bee

contact LD50 (Apis mellifera (bees)): > 100 micrograms/bee
Exposure time: 48 h

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

trifluralin (ISO) (containing <0.5 ppm NPDA):

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

LC50 (Oncorhynchus mykiss (rainbow trout)): 0.088 mg/l
Exposure time: 96 h
Test Type: flow-through test

LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.089 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (water flea Daphnia magna): 0.245 mg/l
Exposure time: 48 h
Test Type: static test

EC50 (mussel Mytilus edulis): 0.096 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 0.0532 mg/l
Exposure time: 72 h

EC50 (Lemna gibba): 0.043 mg/l
Exposure time: 7 d
Test Type: Growth inhibition

EbC50 (diatom Navicula sp.): 0.015 mg/l
End point: Biomass
Exposure time: 5 d

M-Factor (Acute aquatic toxicity) : 10

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 0.00114 mg/l
End point: growth
Exposure time: 48 d
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.0507 mg/l
End point: growth
Exposure time: 21 d
Test Type: semi-static test

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to microorganisms	:	EC50 (activated sludge): > 100 mg/l Exposure time: 3 h
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	:	Remarks: Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg)., Material is practically non-toxic to birds on a dietary basis (LC50 > 5000 ppm). oral LD50 (Colinus virginianus (Bobwhite quail)): > 2250 mg/kg bodyweight. dietary LC50 (Colinus virginianus (Bobwhite quail)): > 5000 mg/kg diet. Exposure time: 5 d oral LD50 (Apis mellifera (bees)): > 100 micrograms/bee contact LD50 (Apis mellifera (bees)): > 100 micrograms/bee

Quartz:

Toxicity to fish	:	Remarks: Based on information for a similar material: Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). LC50 (Danio rerio (zebra fish)): 508 mg/l Exposure time: 96 h Remarks: Based on information for a similar material:
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 731 mg/l Exposure time: 48 h Remarks: For similar material(s):

Persistence and degradability

Components:

isoxaben (ISO):

Biodegradability	:	Result: Not biodegradable Remarks: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.
Chemical Oxygen Demand (COD)	:	1.77 mg/g
ThOD	:	1.98 kg/kg

Stability in water	:	Test Type: Hydrolysis Degradation half life (half-life): > 5 d pH: 7.0
Photodegradation	:	Test Type: Half-life (indirect photolysis) Sensitizer: OH radicals Concentration: 1,500,000 1/cm3 Rate constant: 2.045E-10 cm3/s Method: Estimated.

trifluralin (ISO) (containing <0.5 ppm NPDA):

Biodegradability	:	Remarks: Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability. Concentration: 10 mg/l Result: Not readily biodegradable. Biodegradation: 5 % Exposure time: 28 d Method: OECD Test Guideline 301B or Equivalent Remarks: 10-day Window: Fail
Chemical Oxygen Demand (COD)	:	1.37 kg/kg
Stability in water	:	Test Type: Hydrolysis Degradation half life (half-life): > 1 yr pH: 3 - 9 Method: Measured Test Type: Photolysis Degradation half life (half-life): 0.19 - 3.08 h Method: Measured
Photodegradation	:	Test Type: Half-life (indirect photolysis) Sensitizer: OH radicals Concentration: 1,500,000 1/cm3 Rate constant: 2.4004E-11 cm3/s Method: Estimated.

Quartz:

Biodegradability	:	Remarks: Biodegradation is not applicable.

Bioaccumulative potential

Components:

isoxaben (ISO):

Partition coefficient: n-octanol/water	:	log Pow: 2.64 Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

trifluralin (ISO) (containing <0.5 ppm NPDA):

Bioaccumulation	:	Species: Pimephales promelas (fathead minnow) Bioconcentration factor (BCF): 1,060 - 6,000 Concentration: 0.0018 mg/l Method: Estimated.
Partition coefficient: n-octanol/water	:	log Pow: 5.27 Method: Method Not Specified. Remarks: Bioconcentration potential is high (BCF > 3000 or Log Pow between 5 and 7).

Quartz:

Partition coefficient: n-octanol/water	:	Remarks: Partitioning from water to n-octanol is not applicable.

Balance:

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

Mobility in soil

Components:

isoxaben (ISO):

Distribution among environmental compartments	:	Koc: 700 - 1290 Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).
Stability in soil	:	Test Type: aerobic degradation Dissipation time: 0.358 - 0.883 yr Test Type: Photolysis Dissipation time: 248 d

Quartz:

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

Balance:

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

Other adverse effects

Components:

isoxaben (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.

trifluralin (ISO) (containing <0.5 ppm NPDA):

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.

Quartz:

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.

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 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,

		N.O.S. (Trifluralin)
Class	:	9
Packing group	:	III
Labels	:	9
Environmentally hazardous	:	yes

IATA-DGR

UN/ID No.	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Trifluralin)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	956
Packing instruction (passenger aircraft)	:	956

IMDG-Code

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Trifluralin)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes(Trifluralin)
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 Road

UN/ID/NA number	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Trifluralin)
Class	:	9
Packing group	:	III
Labels	:	CLASS 9
ERG Code	:	171
Marine pollutant	:	no
Reportable Quantity	:	Trifluralin only regulated in pack sizes > 226 kg

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
Specific target organ toxicity (single or repeated exposure)

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

trifluralin (ISO) (containing <0.5 ppm NPDA)	1582-09-8	>= 1 - < 5 %

US State Regulations

Pennsylvania Right To Know

Quartz	14808-60-7
trifluralin (ISO) (containing <0.5 ppm NPDA)	1582-09-8

California Prop. 65

WARNING: This product can expose you to chemicals including Quartz, Kaolin, Quartz, which is/are known to the State of California to cause cancer, and
toluene, 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 : 62719-175

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

Causes moderate eye irritation

Harmful if swallowed or inhaled
Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

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)
OSHA CARC	:	OSHA Specifically Regulated Chemicals/Carcinogens
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-3	:	USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA	:	8-hour, time-weighted average
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA P0 / TWA	:	8-hour time weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-3 / TWA	:	8-hour time weighted average

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; ASTM - American Society for the Testing of Materials; ECx - Concentration associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; 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; NOEC - Non-Observed Effective Concentration; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; (Q)SAR - (Quantitative) Structure Activity Relationship; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SDS - Safety Data Sheet; UN - United Nations.
CFR - Code of Federal Regulations.
IARC - International Agency for Research on Cancer.
IATA-DGR - International Air Transport Association Dangerous Goods Regulations.
OSHA - Occupational Safety and Health Administration.
RCRA - Resource Conservation and Recovery Act.
RQ - Reportable Quantity.
SARA - Superfund Amendments and Reauthorization Act.
TSCA - Toxic Substances Control Act.

Revision Date : 09/12/2023

Product code: FN-3278

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.

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