SAFETY DATA SHEET
according to the OSHA Hazard Communication Standard

Strongarm®

Version	Revision Date:	SDS Number:	Date of last issue: 03/31/2022
1.1	01/07/2025	800080004037	Date of first issue: 03/31/2022

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 : Strongarm®

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

Restrictions on use : After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion-sensitive components of aircraft and spacecraft; (8)

Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

SECTION 2. HAZARDS IDENTIFICATION

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

Not a hazardous substance or mixture.

GHS label elements

No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Diclosulam	145701-21-9	84
Starch	9005-25-8	>= 3 - < 10
Sodium alkylnaphthalenesulfonate	Not Assigned	>= 1 - < 3
dichloromethane	75-09-2	>= 0.3 - < 1
Quinoline Hydrochloride	530-64-3	>= 0.1 - < 0.3
methanol	67-56-1	>= 0.1 - < 0.3
Balance	Not Assigned	> 1

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

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

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.
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	:	If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	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 Carbon dioxide (CO2) Dry chemical 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. 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 chloride gas 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.
Further information	:	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	:	Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation. 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

Advice on safe handling	:	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. 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
Packaging material	:	Unsuitable material: None known.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Diclosulam	145701-21-9	TWA	3 mg/m3	Dow IHG
Starch	9005-25-8	TWA	10 mg/m3	ACGIH
		TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA (respirable fraction)	5 mg/m3	OSHA Z-1
		TWA (Total dust)	15 mg/m3	OSHA P0
		TWA (respirable dust fraction)	5 mg/m3	OSHA P0
dichloromethane	75-09-2	TWA	25 ppm	Corteva OEL
		STEL	125 ppm	Corteva OEL
		TWA	50 ppm	ACGIH
		PEL	25 ppm	OSHA CARC
		STEL	125 ppm	OSHA CARC
methanol	67-56-1	TWA	200 ppm	ACGIH
		STEL	250 ppm	ACGIH
		TWA	200 ppm 260 mg/m3	OSHA Z-1
		TWA	200 ppm 260 mg/m3	OSHA P0
		STEL	250 ppm 325 mg/m3	OSHA P0

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
dichloromethane	75-09-2	Dichloromethane	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/l	ACGIH BEI
methanol	67-56-1	Methanol	Urine	End of shift (As soon as possible after exposure ceases)	15 mg/l	ACGIH BEI

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

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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator.

Hand protection

Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Neoprene. 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	:	Granules.
Color	:	Brown
Odor	:	Fragrant
Odor Threshold	:	No data available
pH	:	7.28 (73 °F / 23 °C) Concentration: 10 (10% mixture in water)
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 data available
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	:	0.55 g/cm3Method: Loose Volumetric (Room Temperature)

Solubility(ies)		
Water solubility	:	Disperses in water
Partition coefficient: n-octanol/water	:	No data available.
Autoignition temperature	:	Not applicable
Viscosity		
Viscosity, kinematic	:	Not applicable
Explosive properties	:	No
Oxidizing properties	:	No significant increase (>5C) in temperature. Reference substance: Monoammonium phosphate

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. Stable under recommended storage conditions. No hazards to be specially mentioned. None known.
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 chloride gas Carbon oxides

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat, male and female): > 5,000 mg/kg Method: OECD Test Guideline 423 Remarks: Information source: Internal study report

Acute inhalation toxicity : LC50 (Rat, male and female): > 6.7 mg/l
Exposure time: 4 h
Test atmosphere: Aerosol
Method: OECD Test Guideline 403
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: Information source: Internal study report

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: Information source: Internal study report

Components:

Diclosulam:

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.04 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, male and female): > 2,000 mg/kg
Symptoms: No deaths occurred at this concentration.
Assessment: The substance or mixture has no acute dermal toxicity

Sodium alkylnaphthalenesulfonate:

Acute oral toxicity : LD50 (Rat): > 2,000 - 5,000 mg/kg
Method: OECD Test Guideline 401

dichloromethane:

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

Acute inhalation toxicity : Remarks: In confined or poorly ventilated areas, vapor can readily accumulate and can cause unconsciousness and death.
Vapor may cause irritation of the upper respiratory tract (nose and throat).
May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.
Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm methylene chloride. Progressively higher levels over 1000 ppm may cause dizziness, drunkenness, and as low as 10,000 ppm, unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats).

LC50 (Mouse): 86 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity

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

Quinoline Hydrochloride:

Acute oral toxicity : LD50 (Rat, male and female): 262 mg/kg
Method: OECD Test Guideline 401
Remarks: For similar material(s):

Acute dermal toxicity : LD50 (Rabbit): 590 mg/kg
Remarks: For similar material(s):

methanol:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Assessment: The component/mixture is toxic after single ingestion.
Remarks: Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.
Effects may be delayed.

Lethal Dose (Humans): 340 mg/kg
Method: Estimated.

Lethal Dose (Humans): Method: Estimated.

Acute inhalation toxicity : LC50 (Rat): 3 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 15,800 mg/kg
Assessment: The component/mixture is toxic after single contact with skin.
Remarks: Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death.

Skin corrosion/irritation

Product:

Species : Rabbit

Method : OECD Test Guideline 404
Result : No skin irritation
Remarks : Information source: Internal study report

Components:

Sodium alkylnaphthalenesulfonate:
Species : Rabbit
Method : OECD Test Guideline 404
Result : Skin irritation

dichloromethane:
Result : Skin irritation

Quinoline Hydrochloride:
Result : Skin irritation

methanol:
Result : No skin irritation

Serious eye damage/eye irritation

Product:
Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405
Remarks : Information source: Internal study report

Components:

Sodium alkylnaphthalenesulfonate:
Species : Rabbit
Result : Corrosive
Method : OECD Test Guideline 437

dichloromethane:
Result : Eye irritation

Quinoline Hydrochloride:
Result : Eye irritation

methanol:
Result : No eye irritation

Respiratory or skin sensitization

Product:

Test Type	:	Buehler Test
Species	:	Guinea pig
Assessment	:	Does not cause skin sensitization.
Method	:	OECD Test Guideline 406
Remarks	:	Information source: Internal study report

Components:

Diclosulam:

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

dichloromethane:

Result	:	Does not cause skin sensitization.

Quinoline Hydrochloride:

Species	:	Mouse
Result	:	Does not cause skin sensitization.

Germ cell mutagenicity

Components:

Diclosulam:

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

dichloromethane:

Germ cell mutagenicity - Assessment	:	In vitro genetic toxicity studies were negative in some cases and positive in other cases., Negative or equivocal results have been obtained in genetic toxicity tests with methylene chloride using mammalian cells or animals. This is consistent with the lack of interaction with DNA in rats and hamsters. Although results of Ames bacterial tests have generally been positive, overall the data suggest that genotoxic potential does not appear to be a significant factor in the toxicity of methylene chloride.

Quinoline Hydrochloride:

Germ cell mutagenicity - Assessment	:	For similar material(s):, In vitro tests showed mutagenic effects

methanol:

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

Animal genetic toxicity studies were negative in some cases and positive in other cases.

Carcinogenicity

Product:

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

Components:

Diclosulam:

Carcinogenicity - Assessment : For the active ingredient(s):, Did not cause cancer in laboratory animals.

dichloromethane:

Carcinogenicity - Assessment : Methylene chloride has been shown to increase the incidence of malignant tumors in mice and benign tumors in rats. Other animal studies on methylene chloride alone, as well as several human epidemiology studies, failed to show a tumorigenic response. Methylene chloride is not believed to pose a measurable carcinogenic risk to humans when handled as recommended., Limited evidence of carcinogenicity in animal studies

Quinoline Hydrochloride:

Carcinogenicity - Assessment : For similar material(s):, Has caused cancer in laboratory animals., Possible human carcinogen

methanol:

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

IARC	Group 2A: Probably carcinogenic to humans dichloromethane	75-09-2
OSHA	OSHA specifically regulated carcinogen dichloromethane	75-09-2
NTP	Reasonably anticipated to be a human carcinogen dichloromethane	75-09-2

Reproductive toxicity

Components:

Diclosulam:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

dichloromethane:

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., Did not cause birth defects in laboratory animals.

methanol:

Reproductive toxicity - Assessment : In animal studies, did not interfere with reproduction.
Methanol has caused birth defects in mice at doses nontoxic to the mother as well as slight behavioral effects in offspring of rats.

STOT-single exposure

Product:

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

Components:

Diclosulam:

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

Starch:

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

Sodium alkylnaphthalenesulfonate:

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

dichloromethane:

Routes of exposure : Inhalation
Target Organs : Central nervous system
Assessment : May cause drowsiness or dizziness.

Quinoline Hydrochloride:

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

methanol:

Target Organs : Eyes, Central nervous system
Assessment : Causes damage to organs.

STOT-repeated exposure

Product:

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

Repeated dose toxicity

Components:

Diclosulam:

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

Starch:

Remarks : No relevant data found.

dichloromethane:

Remarks : In animals, effects have been reported on the following organs:
Kidney.
Liver.
Blood.
May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

Quinoline Hydrochloride:

Remarks : For similar material(s):
In animals, effects have been reported on the following organs:
Liver.

methanol:

Remarks : Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

Aspiration toxicity

Product:

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

Components:

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

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

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

dichloromethane:
Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

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

methanol:
May be harmful if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

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

ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.0136 mg/l
Exposure time: 72 h
Test Type: static test

Components:

Diclosulam:

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)): > 110 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203 or Equivalent

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 55 mg/l Exposure time: 48 h Test Type: static test Method: OECD Test Guideline 202 or Equivalent
Toxicity to algae/aquatic plants	:	EbC50 (Pseudokirchneriella subcapitata (green algae)): 0.0016 mg/l End point: Biomass Exposure time: 120 h Method: OECD Test Guideline 201 or Equivalent EC50 (Lemna minor (duckweed)): 0.00116 mg/l End point: Biomass
M-Factor (Acute aquatic toxicity)	:	100
Toxicity to fish (Chronic toxicity)	:	NOEC (Pimephales promelas (fathead minnow)): 9.36 mg/l Exposure time: 33 d Test Type: flow-through
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 5.66 mg/l End point: growth Exposure time: 21 d
M-Factor (Chronic aquatic toxicity)	:	100
Toxicity to soil dwelling organisms	:	LC50 (Eisenia fetida (earthworms)): >991 mg/kg dry weight (d.w.) 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)): > 5620 mg/kg diet. contact LD50 (Apis mellifera (bees)): > 25 µg/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.

Sodium alkylnaphthalenesulfonate:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 10 - 100 mg/l

Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

dichloromethane:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 193 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 27 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic plants : EbC50 (Pseudokirchneriella subcapitata (green algae)): > 662 mg/l
End point: Biomass
Exposure time: 96 h
Method: OECD Test Guideline 201 or Equivalent

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 83 mg/l
End point: growth
Exposure time: 28 d
Test Type: flow-through test

Toxicity to microorganisms : EC50 (activated sludge): 2,590 mg/l
Exposure time: 40 min
Test Type: static test
Method: OECD 209 Test

Quinoline Hydrochloride:

Toxicity to fish : Remarks: Based on information for a similar material:
Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50 (Poecilia reticulata (guppy)): 29.9 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
Remarks: For similar material(s):

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna): 0.8 mg/l
Exposure time: 21 d
Test Type: semi-static test
Method: OECD Test Guideline 211

methanol:

Toxicity to fish : Remarks: Material is practically non-toxic to aquatic organ-

isms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

LC50 (Oncorhynchus mykiss (rainbow trout)): 19,000 mg/l
Exposure time: 96 h
Method: Method Not Specified.

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 24 h
Method: Method Not Specified.

Toxicity to microorganisms : IC50 (activated sludge): > 1,000 mg/l
Exposure time: 3 h

Persistence and degradability

Components:

Starch:

Biodegradability : Remarks: Biodegradation may occur under aerobic conditions (in the presence of oxygen).

Sodium alkylnaphthalenesulfonate:

Biodegradability : Result: Not biodegradable
Method: OECD Test Guideline 301D

dichloromethane:

Biodegradability : Inoculum: activated sludge
Concentration: 5 mg/l
Result: Readily biodegradable.
Biodegradation: 68 %
Exposure time: 28 d
Method: OECD Test Guideline 301D or Equivalent
Remarks: 10-day Window: Pass

Inoculum: activated sludge
Concentration: 1 mg/l
Result: Readily biodegradable.
Biodegradation: 66 %
Exposure time: 50 h
Method: Simulation study
Remarks: 10-day Window: Not applicable

ThOD : 0.38 kg/kg

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Rate constant: 1.3E-13 cm3/s
Method: Estimated.

methanol:

Biodegradability	:	Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Result: Readily biodegradable. Biodegradation: 99 % Exposure time: 28 d Method: OECD Test Guideline 301D or Equivalent Remarks: 10-day Window: Pass
Biochemical Oxygen Demand (BOD)	:	72 % Incubation time: 5 d 79 % Incubation time: 20 d
Chemical Oxygen Demand (COD)	:	1.49 kg/kg Method: Dichromate
ThOD	:	1.50 kg/kg
Photodegradation	:	Test Type: Half-life (indirect photolysis) Sensitizer: OH radicals Concentration: 1,500,000 1/cm3 Rate constant: 6.16E-13 cm3/s Method: Estimated.

Bioaccumulative potential

Components:

Diclosulam:

Bioaccumulation	:	Species: Lepomis macrochirus (Bluegill sunfish) Bioconcentration factor (BCF): 1.05 Exposure time: 21 d
Partition coefficient: n-octanol/water	:	log Pow: 1.282 Method: Estimated. Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Starch:

Partition coefficient: n-octanol/water	:	Remarks: No bioconcentration is expected because of the relatively high molecular weight (MW greater than 1000).

Sodium alkylnaphthalenesulfonate:

Bioaccumulation	:	Remarks: Bioaccumulation is unlikely.
Partition coefficient: n-octanol/water	:	log Pow: -3.3 (68 °F / 20 °C)

dichloromethane:

Bioaccumulation	:	Species: Fish Bioconcentration factor (BCF): 2 - 40 Method: Measured
Partition coefficient: n-octanol/water	:	log Pow: 1.25 (68 °F / 20 °C) Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Quinoline Hydrochloride:

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

methanol:

Bioaccumulation	:	Species: Fish Bioconcentration factor (BCF): < 10 Method: Measured
Partition coefficient: n-octanol/water	:	log Pow: -0.77 Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Balance:

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

Mobility in soil

Components:

Diclosulam:

Distribution among environmental compartments	:	Koc: 90 Remarks: Potential for mobility in soil is high (Koc between 50 and 150).

Starch:

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

dichloromethane:

Distribution among environmental compartments	:	Koc: 46.8 Method: Estimated. Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Quinoline Hydrochloride:

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

methanol:

Distribution among environmental compartments : Koc: 0.44
Method: Estimated.
Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Balance:

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

Other adverse effects

Components:

Diclosulam:

Results of PBT and vPvB assessment : Substance is not persistent, bioaccumulative, and toxic (PBT). Substance is not very persistent and very bioaccumulative (vPvB).

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

Starch:

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 alkylnaphthalenesulfonate:

Results of PBT and vPvB assessment : Substance is not persistent, bioaccumulative, and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

dichloromethane:

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 : Regulation: (Update: 11/24/2010 KS)
Remarks: This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

Quinoline Hydrochloride:

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.

methanol:

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.

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. (Diclosulam)
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. (Diclosulam)
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. (Diclosulam)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes(Diclosulam)
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
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	:	No SARA Hazards
SARA 313	:	The following components are subject to reporting levels established by SARA Title III, Section 313:

dichloromethane	75-09-2	>= 0.1 - < 1 %

US State Regulations

Pennsylvania Right To Know

Starch	9005-25-8
dichloromethane	75-09-2

California Prop. 65

WARNING: This product can expose you to chemicals including dichloromethane, Quinoline Hydrochloride, which is/are known to the State of California to cause cancer, and methanol, 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.

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:
dichloromethane 75-09-2

After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion-sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

Federal Insecticide, Fungicide and Rodenticide Act

EPA Registration Number : 62719-288

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)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
Corteva OEL	:	Corteva Occupational Exposure Limit
Dow IHG	:	Dow Industrial Hygiene Guideline
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
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):
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA CARC / STEL	:	Excursion limit
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / 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 : 01/07/2025

Product code: BF-309

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