

SAFETY DATA SHEET

DOW AGROSCIENCES LLC

Product name: COBALT™ Advanced GF-3581

Issue Date: 12/13/2018

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DOW AGROSCIENCES LLC 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.

1. IDENTIFICATION

Product name: COBALT™ Advanced GF-3581

Recommended use of the chemical and restrictions on use

Identified uses: End use insecticide product

COMPANY IDENTIFICATION

DOW AGROSCIENCES LLC
9330 ZIONSVILLE RD
INDIANAPOLIS IN 46268-1053
UNITED STATES

Customer Information Number:

800-992-5994
info@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994

Local Emergency Contact: 352-323-3500

2. HAZARDS IDENTIFICATION

Hazard classification

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids - Category 3

Acute toxicity - Category 3 - Oral

Acute toxicity - Category 4 - Inhalation

Eye irritation - Category 2A

Specific target organ toxicity - single exposure - Category 3

Aspiration hazard - Category 1

Label elements

Hazard pictograms



Signal word: **DANGER!**

Hazards

Flammable liquid and vapour.
Toxic if swallowed.
May be fatal if swallowed and enters airways.
Causes serious eye irritation.
Harmful if inhaled.
May cause respiratory irritation.
May cause drowsiness or dizziness.

Precautionary statements

Prevention

Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ eye protection/ face protection.

Response

IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Do NOT induce vomiting.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage

Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal

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

Other hazards

No data available

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Component	CASRN	Concentration
Chlorpyrifos	2921-88-2	28.12%
Lambda-cyhalothrin	91465-08-6	1.6%
Solvent naphtha (petroleum), light aromatic	64742-95-6	27.1%
1,2,4-Trimethylbenzene	95-63-6	8.1%
Glycerol	56-81-5	2.4%
1,3,5-Trimethylbenzene	108-67-8	2.1%
Cumene	98-82-8	1.0%
Xylene	1330-20-7	0.3%
Balance	Not available	31.17%

4. FIRST AID MEASURES

Description of first aid measures**General advice:**

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

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

Skin contact: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact: Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Call a poison control

center or doctor for treatment advice. Suitable emergency eye wash facility should be available in work area.

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

Most important symptoms and effects, both acute and delayed:

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

Indication of any immediate medical attention and special treatment needed

Notes to physician: Maintain adequate ventilation and oxygenation of the patient. Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. Attempt seizure control with diazepam 5-10 mg (adults) intravenous over 2-3 minutes. Repeat every 5-10 minutes as needed. Monitor for hypotension, respiratory depression, and need for intubation. Consider second agent if seizures persist after 30 mg. If seizures persist or recur administer phenobarbital 600-1200 mg (adults) intravenous diluted in 60 ml 0.9% saline given at 25-50 mg/minute. Evaluate for hypoxia, dysrhythmia, electrolyte disturbance, hypoglycemia (treat adults with dextrose 100 mg intravenous). If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. 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.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam.

Unsuitable extinguishing media: No data available

Special hazards arising from the substance or mixture

Hazardous combustion products: Under fire conditions some components of this product may decompose. The smoke may contain unidentified toxic and/or irritating compounds. Combustion products may include and are not limited to: Sulfur oxides. Phosphorous compounds. Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.

Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause

environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to section 7, Handling, for additional precautionary measures. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Vapor explosion hazard. Keep out of sewers. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. Spills or discharge to natural waterways is likely to kill aquatic organisms.

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

7. HANDLING AND STORAGE

Precautions for safe handling: Keep away from heat, sparks and flame. Keep out of reach of children. Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage: Avoid temperatures above 50°C (122°F) Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

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

Component	Regulation	Type of listing	Value/Notation
Chlorpyrifos	ACGIH	TWA Inhalable fraction and vapor	0.1 mg/m ³
	ACGIH	TWA	SKIN, BEI

Solvent naphtha (petroleum), light aromatic	Dow IHG	TWA	100 mg/m3
	Dow IHG	STEL	300 mg/m3
	OSHA Z-1	TWA	2,000 mg/m3 500 ppm
	ACGIH	TWA	200 mg/m3 , total hydrocarbon vapor
1,2,4-Trimethylbenzene	ACGIH	TWA	25 ppm
Glycerol	OSHA Z-1	TWA mist, respirable fraction	5 mg/m3
	OSHA Z-1	TWA mist, total dust	15 mg/m3
1,3,5-Trimethylbenzene	ACGIH	TWA	25 ppm
	ACGIH	TWA	50 ppm
Cumene	OSHA Z-1	TWA	245 mg/m3 50 ppm
	OSHA Z-1	TWA	SKIN
Xylene	OSHA P0	TWA	245 mg/m3 50 ppm
	ACGIH	TWA	BEI
	ACGIH	STEL	BEI
	OSHA Z-1	TWA	435 mg/m3 100 ppm
	ACGIH	TWA	100 ppm
	ACGIH	STEL	150 ppm

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

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Xylene	1330-20-7	Methylhippuric acids	Urine	End of shift (As soon as possible after exposure ceases)	1.5 g/g creatinine	ACGIH BEI

Exposure controls

Engineering controls: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

Individual protection measures

Eye/face protection: Use chemical goggles.

Skin protection

Hand protection: 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 include: 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.

Other protection: Use protective clothing chemically resistant to this material.

Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use an approved respirator. Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material. For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.

The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state	Liquid.
Color	White
Odor	Aromatic
Odor Threshold	No data available
pH	4.34 <i>pH Electrode</i>
Melting point/range	Not applicable
Freezing point	No data available
Boiling point (760 mmHg)	No data available
Flash point	closed cup 55 °C (131 °F)
Evaporation Rate (Butyl Acetate = 1)	No data available
Flammability (solid, gas)	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor Pressure	No data available
Relative Vapor Density (air = 1)	No data available
Relative Density (water = 1)	No data available
Water solubility	No data available
Partition coefficient: n-octanol/water	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
Dynamic Viscosity	No data available
Kinematic Viscosity	No data available
Explosive properties	No
Oxidizing properties	No significant increase (>5C) in temperature.
Liquid Density	1.0654 g/ml <i>Digital density meter</i>

Molecular weight No data available

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

10. STABILITY AND REACTIVITY

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

Chemical stability: Unstable at elevated temperatures.

Possibility of hazardous reactions: Polymerization will not occur.

Conditions to avoid: Avoid temperatures above 50 °C
Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible materials: Avoid contact with: 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: Hydrogen chloride. Organic sulfides. Sulfur dioxide. Toxic gases are released during decomposition.

11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Acute oral toxicity

Moderate toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

For similar material(s):
LD50, Rat, female, 114.5 mg/kg

Acute dermal toxicity

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

For similar material(s):
LD50, Rat, male and female, > 5,000 mg/kg

Acute inhalation toxicity

Prolonged excessive exposure to mist may cause serious adverse effects, even death. May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness.

For similar material(s):
LC50, Rat, females, 4 Hour, dust/mist, 2.07 mg/l

Skin corrosion/irritation

Brief contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation

May cause moderate eye irritation.

Corneal injury is unlikely.

Sensitization

For similar material(s):

Did not demonstrate the potential for contact allergy in mice.

For respiratory sensitization:

No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure)

May cause respiratory irritation.

May cause drowsiness or dizziness.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

For the active ingredient(s):

Chlorpyrifos.

Excessive exposure may produce organophosphate type cholinesterase inhibition.

Signs and symptoms of excessive exposure to active ingredient may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, convulsions.

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

Adrenal gland.

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

Based on information for component(s):

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

Blood.

Kidney.

Liver.

Respiratory tract.

Cataracts were observed in rats exposed to cumene vapors.

Excessive exposure to glycerine may cause increased fat levels in blood.

Carcinogenicity

For the minor component(s): Has caused cancer in laboratory animals. There is no evidence that these findings are relevant to humans. Active ingredient did not cause cancer in laboratory animals.

Teratogenicity

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

Based on information for component(s): Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Has caused birth defects in laboratory animals only at doses producing severe toxicity in the mother.

Reproductive toxicity

Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

Based on information for component(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Reproductive effects seen in female animals are believed to be due to altered nutritional states resulting from extremely high doses of glycerine given in the diet. Similar effects have been seen in animals fed synthetic diets.

Mutagenicity

In vitro genetic toxicity studies were negative. Based on a majority of negative data and some equivocal or marginally positive results, active ingredient is considered to have minimal genetic toxicity potential.

Aspiration Hazard

May be fatal if swallowed and enters airways.

Carcinogenicity

Component	List	Classification
Solvent naphtha (petroleum), light aromatic	ACGIH	A3: Confirmed animal carcinogen with unknown relevance to humans.
Cumene	IARC	Group 2B: Possibly carcinogenic to humans
	US NTP	Reasonably anticipated to be a human carcinogen

12. ECOLOGICAL INFORMATION

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

Toxicity

Acute toxicity to aquatic invertebrates

For similar material(s):

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

For similar material(s):

EC50, water flea Daphnia magna, static test, 48 Hour, 0.000319 mg/l

Persistence and degradability

Chlorpyrifos

Biodegradability: Biodegradation under aerobic laboratory conditions is below detectable limits (BOD20 or BOD28/ThOD < 2.5%).

10-day Window: Fail

Biodegradation: 22 %

Exposure time: 28 d

Method: OECD Test Guideline 301D or Equivalent

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	0.000 %

Stability in Water (1/2-life)

Hydrolysis, half-life, 72 d

Photodegradation**Test Type:** Half-life (indirect photolysis)**Sensitization:** OH radicals**Atmospheric half-life:** 1.4 Hour**Method:** Estimated.**Lambda-cyhalothrin****Biodegradability:** Chemical degradation (hydrolysis) is expected in the environment within days to weeks.**Solvent naphtha (petroleum), light aromatic****Biodegradability:** For the major component(s): Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%). For some component(s): Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%).**1,2,4-Trimethylbenzene****Biodegradability:** Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).**Biodegradation:** 100 %**Exposure time:** 1 d**Theoretical Oxygen Demand:** 3.19 mg/mg**Photodegradation****Test Type:** Half-life (indirect photolysis)**Sensitization:** OH radicals**Atmospheric half-life:** 0.641 d**Method:** Estimated.**Glycerol****Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

10-day Window: Not applicable

Biodegradation: 63 %**Exposure time:** 14 d**Method:** OECD Test Guideline 301C or Equivalent**Theoretical Oxygen Demand:** 1.22 mg/mg**1,3,5-Trimethylbenzene**

Biodegradability: 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.

10-day Window: Not applicable

Biodegradation: 0 %

Exposure time: 28 d

Method: OECD Test Guideline 301C or Equivalent

10-day Window: Not applicable

Biodegradation: 50 %

Exposure time: 4.4 d

Method: Calculated.

Theoretical Oxygen Demand: 3.19 mg/mg

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 3.7 Hour

Method: Estimated.

Cumene

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

10-day Window: Pass

Biodegradation: 70 %

Exposure time: 20 d

Method: OECD Test Guideline 301D or Equivalent

Theoretical Oxygen Demand: 3.20 mg/mg Estimated.

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	40%
10 d	62%
20 d	70%

Photodegradation

Test Type: Half-life (indirect photolysis)

Sensitization: OH radicals

Atmospheric half-life: 1.55 d

Method: Estimated.

Xylene

Biodegradability: Material is expected to be readily biodegradable.

10-day Window: Pass

Biodegradation: > 60 %

Exposure time: 10 d

Method: OECD Test Guideline 301F or Equivalent

Theoretical Oxygen Demand: 3.17 mg/mg

Biological oxygen demand (BOD)

Incubation Time	BOD
5 d	37.000 %
10 d	58.000 %
20 d	72.000 %

Photodegradation**Test Type:** Half-life (indirect photolysis)**Sensitization:** OH radicals**Atmospheric half-life:** 19.7 Hour**Method:** Estimated.**Balance****Biodegradability:** No relevant data found.**Bioaccumulative potential****Chlorpyrifos****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 4.7 at 20 °C Estimated.**Lambda-cyhalothrin****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 7 at 20 °C**Solvent naphtha (petroleum), light aromatic****Bioaccumulation:** For the major component(s): Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5). For the minor component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**1,2,4-Trimethylbenzene****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 3.63 Measured**Bioconcentration factor (BCF):** 33 - 275 Cyprinus carpio (Carp) 56 d Measured**Glycerol****Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Partition coefficient: n-octanol/water(log Pow):** -1.76 at 20 °C Measured**1,3,5-Trimethylbenzene****Bioaccumulation:** Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).**Partition coefficient: n-octanol/water(log Pow):** 3.42 Measured**Bioconcentration factor (BCF):** 161 Pimephales promelas (fathead minnow) Measured**Cumene**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.4 - 3.7 Measured
Bioconcentration factor (BCF): 35.5 Fish Measured

Xylene

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 3.12 Measured
Bioconcentration factor (BCF): 25.9 Rainbow trout (Salmo gairdneri) Measured

Balance

Bioaccumulation: No relevant data found.

Mobility in soil

Chlorpyrifos

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient (Koc): 8151

Lambda-cyhalothrin

Expected to be relatively immobile in soil (Koc > 5000).
Partition coefficient (Koc): > 38000

Solvent naphtha (petroleum), light aromatic

For the major component(s):
Potential for mobility in soil is low (Koc between 500 and 2000).

1,2,4-Trimethylbenzene

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient (Koc): 720 Estimated.

Glycerol

Potential for mobility in soil is very high (Koc between 0 and 50).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.
Partition coefficient (Koc): 1 Estimated.

1,3,5-Trimethylbenzene

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient (Koc): 741.65 Estimated.

Cumene

Potential for mobility in soil is low (Koc between 500 and 2000).
Partition coefficient (Koc): 800 - 2800 Estimated.

Xylene

Potential for mobility in soil is medium (Koc between 150 and 500).
Partition coefficient (Koc): 443 Estimated.

Balance

No relevant data found.

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Organophosphorus pesticides, liquid, toxic, flammable(Chlorpyrifos, Solvent naphtha, petroleum, light arom.)
UN number	UN 3017
Class	6.1 (3)
Packing group	III
Marine pollutant	Chlorpyrifos
Reportable Quantity	Chlorpyrifos, Xylene

Classification for SEA transport (IMO-IMDG):

Proper shipping name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC, FLAMMABLE(Chlorpyrifos, Solvent naphtha, petroleum, light arom.)
UN number	UN 3017
Class	6.1 (3)
Packing group	III
Marine pollutant	Chlorpyrifos
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code	Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO):

Proper shipping name	Organophosphorus pesticide, liquid, toxic, flammable(Chlorpyrifos, Solvent naphtha, petroleum, light arom.)
UN number	UN 3017
Class	6.1 (3)
Packing group	III

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service

representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Flammable (gases, aerosols, liquids, or solids)
 Specific target organ toxicity (single or repeated exposure)
 Acute toxicity (any route of exposure)
 Aspiration hazard
 Serious eye damage or eye irritation

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

Components	CASRN
1,2,4-Trimethylbenzene	95-63-6
Cumene	98-82-8

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Components	CASRN
Chlorpyrifos	2921-88-2
Solvent naphtha (petroleum), light aromatic	64742-95-6
1,2,4-Trimethylbenzene	95-63-6
Glycerol	56-81-5
Cumene	98-82-8

California Prop. 65

WARNING: This product can expose you to chemicals including Cumene, Methylene chloride, Sulfuric acid, Ethylene Oxide, Propylene oxide, 1,4-Dioxane, Formaldehyde, Acetaldehyde, which is/are known to the State of California to cause cancer, and Chlorpyrifos, 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.

United States TSCA Inventory (TSCA)

This product contains chemical substance(s) exempt from U.S. EPA TSCA Inventory requirements. It is regulated as a pesticide subject to Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requirements.

EPA Registration Number: 62719-615

16. OTHER INFORMATION

Hazard Rating System

NFPA

Health	Flammability	Instability

2	2	1
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Revision

Identification Number: 99048055 / A211 / Issue Date: 12/13/2018 / Version: 4.0

DAS Code: GF-3581

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

Legend

ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
BEI	Biological Exposure Indices
Dow IHG	Dow Industrial Hygiene Guideline
OSHA P0	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
SKIN	Absorbed via skin
SKIN, BEI	Absorbed via Skin, Biological Exposure Indice
STEL	Short-term exposure limit
TWA	8-hour time weighted average

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; 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

Information Source and References

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

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