

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Authority® First DF Herbicide

Version	Revision Date:	SDS Number:	Date of last issue: -
1.5	07/31/2026	50000384	Date of first issue: 03/04/2020

This Safety Data Sheet adheres to the standards and regulatory requirements of USA and may not meet the regulatory requirements in other countries.

SECTION 1. IDENTIFICATION

Product identifier

Product name Authority® First DF Herbicide

Other means of identification

Product code 50000384

Recommended use of the chemical and restrictions on use

Recommended use Herbicide

Restrictions on use Use as recommended by the label.

Manufacturer or supplier's details

Manufacturer FMC Corporation
2929 WALNUT ST
PHILADELPHIA PA 19104
USA
+1 (215) 299-6000 (Corporate)
SDS-Info@fmc.com, +1-(800)-346-0833 (FMC Cust. Service)

Supplier Address

FMC Corporation
2929 Walnut Street
Philadelphia PA 19104
USA

Emergency telephone

For leak, fire, spill or accident emergencies, call:
1 800 / 424-9300 (CHEMTREC - U.S.A.)
1 703 / 741-5970 (CHEMTREC - International)
1 703 / 527-3887 (CHEMTREC - Alternate)

Medical emergency:
U.S.A. & Canada: +1 800 / 331-3148
All other countries: +1 651 / 632-6793 (Collect)

SECTION 2. HAZARDS IDENTIFICATION

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

Hazards for the product as supplied

Combustible dust

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Acute toxicity (Inhalation) : Category 4

Reproductive toxicity : Category 2

Specific target organ toxicity : Category 2
- repeated exposure

Other hazards

Very toxic to aquatic life with long lasting effects.

GHS label elements

Hazard pictograms :



Signal Word : WARNING

Hazard Statements : May form combustible dust concentrations in air.
H332 Harmful if inhaled.
H361 Suspected of damaging fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.

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.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:

P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components

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Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Sulfentrazone	122836-35-5*	51.4	-
Cloransulam-methyl	147150-35-4*	7.5	-
toluene	108-88-3*	$\geq 1 - \leq 5$	-
Lignin, sodium salt	37203-80-8*	$\geq 1 - \leq 5$	TSC
sodium 2-[methyleoleoylamino]ethane-1-sulphonate	137-20-2*	$\geq 1 - \leq 5$	TSC
Quartz (SiO ₂)	14808-60-7*	$\geq 0.5 - \leq 1.5$	TSC

* Indicates that the identifier is a CAS No.

TSC- the actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : Move to fresh air.
Consult a physician after significant exposure.
If unconscious, place in recovery position and seek medical advice.
If experiencing any discomfort, immediately remove from exposure. Light cases: Keep person under surveillance. Get medical attention immediately if symptoms develop. Serious cases: Get medical attention immediately or call for an ambulance.
- In case of skin contact : Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.
Wash off immediately with plenty of water for at least 15 minutes.
Call a physician if irritation develops or persists.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Do not induce vomiting without medical advice.
Keep respiratory tract clear.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

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General Symptoms	: None known.
Symptoms After Inhalation	: May cause shortness of breath, tightness of the chest, a sore throat and cough. Respiratory disorder upper respiratory tract infection
Symptoms After Skin Contact	: None known.
Symptoms After Eye Contact	: None known.
Symptoms After Swallowing	: None known.
Protection of first-aiders	: First Aid responders should pay attention to self-protection and use the recommended protective clothing Avoid inhalation, ingestion and contact with skin and eyes. If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	: Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	: Dry chemical, CO2, water spray or regular foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: High volume water jet Do not spread spilled material with high-pressure water streams.
Specific hazards during fire fighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	: Chlorinated compounds Fluorinated compounds Sulfur oxides Nitrogen oxides (NOx) Carbon oxides Hydrogen cyanide Hydrogen chloride Fire may produce irritating, corrosive and/or toxic gases. Sulphuric acid Hydrogen fluoride Hazardous combustion products
Further information	: Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

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Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment : Wear self-contained breathing apparatus for firefighting if necessary for fire-fighters

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Avoid dust formation.
Avoid breathing dust.
Ensure adequate ventilation.
Never return spills in original containers for re-use.
Mark the contaminated area with signs and prevent access to unauthorized personnel.
Only qualified personnel equipped with suitable protective equipment may intervene.
For disposal considerations see section 13.

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed.

Advice on safe handling : Avoid formation of respirable particles.
Do not breathe vapors/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.

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Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m3	NIOSH REL
		ST	150 ppm 560 mg/m3	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2
		STEL	150 ppm 560 mg/m3	OSHA P0
		TWA	100 ppm 375 mg/m3	OSHA P0
Quartz (SiO ₂)	14808-60-7	TWA (Respirable dust)	0.05 mg/m3	OSHA Z-1
		TWA (respirable)	10 mg/m3 / %SiO ₂ +2	OSHA Z-3
		TWA (respirable)	250 mppcf / %SiO ₂ +5	OSHA Z-3
		TWA (respirable dust fraction)	0.1 mg/m3	OSHA P0
		TWA (Respirable particulate matter)	0.025 mg/m3 (Silica)	ACGIH
		PEL (respirable)	0.05 mg/m3	OSHA CARC
		TWA (Respirable dust)	0.05 mg/m3 (Silica)	NIOSH REL

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI

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		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g creatinine	ACGIH BEI

Personal protective equipment

- Respiratory protection : No personal respiratory protective equipment normally required.
- Hand protection
Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
- Skin and body protection : Dust impervious protective suit
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Protective measures : Plan first aid action before beginning work with this product.
Always have on hand a first-aid kit, together with proper instructions.
Ensure that eye flushing systems and safety showers are located close to the working place.
Wear suitable protective equipment.
- Hygiene measures : When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical state : solid
- Form : granules
- Color : tan
- Odor : musty
- Odor Threshold : No data available
- pH : 6.0 - 8.0

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Melting point/freezing point	: No data available
Initial boiling point and boiling range	: No data available
Flash point	: No data available
Evaporation rate	: Not applicable
Flammability (solid, gas)	: May form explosive dust-air mixture.
Upper explosion limit / Upper flammability limit	: No data available
Lower explosion limit / Lower flammability limit	: No data available
Vapor pressure	: No data available
Relative vapor density	: No data available
Relative density	: No data available
Density	: No data available
Bulk density	: 35 - 42 lb/scf
Solubility(ies)	
Water solubility	: dispersible
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	
Viscosity, dynamic	: No data available
Explosive properties	: Dust may form explosive mixture in air.
Oxidizing properties	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: No decomposition if stored and applied as directed.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed. Dust may form explosive mixture in air.
Conditions to avoid	: Avoid extreme temperatures. Avoid dust formation.
Incompatible materials	: Avoid strong acids, bases, and oxidizers.
Hazardous decomposition products	: No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if inhaled.

Product:

Acute oral toxicity	: LD50 (Rat): 2,504 mg/kg
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Acute inhalation toxicity : LC50 (Rat): > 4.9 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

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

Components:

Sulfentrazone:

Acute oral toxicity : LD50 (Rat, female): 2,689 mg/kg
Symptoms: ataxia, clonic convulsions, Fatality
GLP: yes

Acute inhalation toxicity : LC50 (Rat, male and female): > 4.13 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: EPA OPP 81 - 3
Symptoms: ataxia, Breathing difficulties
GLP: yes
Remarks: no mortality

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg
Method: EPA OPP 81-2
GLP: yes
Assessment: The component/mixture is minimally toxic after single contact with skin.

Cloransulam-methyl:

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 3.77 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

toluene:

Acute oral toxicity : LD50 (Rat): 5,580 mg/kg

Acute inhalation toxicity : LC50 (Rat, male): 25.7 mg/l
Exposure time: 4 h
Test atmosphere: vapor

LC50 (Rat, female): 30 mg/l
Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : (Rabbit): 12,267 mg/kg

Lignin, sodium salt:

Acute oral toxicity : LD50 (Rat, male and female): 12,000 mg/kg

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sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Acute oral toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity

Quartz (SiO₂):

Acute oral toxicity	: LD50 (Rat): > 5,000 mg/kg
Acute inhalation toxicity	: LC50 (Rat): > 5.01 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 436 Assessment: The substance or mixture has no acute inhalation toxicity Remarks: Based on data from similar materials
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity Remarks: Based on data from similar materials

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Species	: Rabbit
Result	: slight irritation
Remarks	: May cause skin irritation and/or dermatitis.

Components:

Sulfentrazone:

Species	: Rabbit
Assessment	: No skin irritation
Method	: EPA OPP 81-5
Result	: No skin irritation
GLP	: yes

Cloransulam-methyl:

Result	: No skin irritation
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toluene:

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Species	:	Rabbit
Assessment	:	Repeated exposure may cause skin dryness or cracking.
Result	:	Skin irritation

Lignin, sodium salt:

Result	:	Skin irritation
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sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation

Quartz (SiO₂):

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation
Remarks	:	Based on data from similar materials

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Species	:	Rabbit
Result	:	slight irritation
Remarks	:	Product dust may be irritating to eyes, skin and respiratory system.

Components:

Sulfentrazone:

Species	:	Rabbit
Result	:	No eye irritation
Assessment	:	No eye irritation
Method	:	EPA OPP 81-4
GLP	:	yes

Cloransulam-methyl:

Result	:	slight irritation
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toluene:

Species	:	Rabbit
Result	:	No eye irritation

Lignin, sodium salt:

Result	:	Moderate eye irritation
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sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Species	: Rabbit
Result	: Irritation to eyes, reversing within 7 days
Method	: OECD Test Guideline 405

Quartz (SiO₂):

Species	: Rabbit
Result	: No eye irritation
Method	: OECD Test Guideline 405
Remarks	: Based on data from similar materials

Respiratory or skin sensitization

Skin sensitization

Based on available data, the classification criteria are not met.

Respiratory sensitization

Based on available data, the classification criteria are not met.

Product:

Result	: Does not cause skin sensitization.
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Components:

Sulfentrazone:

Test Type	: Maximization Test
Species	: Guinea pig
Method	: OECD Test Guideline 406
Result	: Does not cause skin sensitization.

Cloransulam-methyl:

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

toluene:

Test Type	: Maximization Test
Species	: Guinea pig
Result	: Not a skin sensitizer.

sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Test Type	: Maximization Test
Species	: Guinea pig
Assessment	: Does not cause skin sensitization.
Method	: OECD Test Guideline 406
Result	: negative

Quartz (SiO₂):

Test Type	: Local lymph node assay (LLNA)
Species	: Mouse

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Method	: OECD Test Guideline 429
Result	: Does not cause skin sensitization.
Remarks	: Based on data from similar materials

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

Sulfentrazone:

Genotoxicity in vitro	: Test Type: Ames test Metabolic activation: with and without metabolic activation Result: negative
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	: Test Type: Mouse lymphoma assay Test system: mouse lymphoma cells Metabolic activation: Metabolic activation Result: negative
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Genotoxicity in vivo	: Test Type: Micronucleus test Species: Mouse Application Route: Intraperitoneal injection Result: negative
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Germ cell mutagenicity - Assessment	: Animal testing did not show any mutagenic effects.
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Cloransulam-methyl:

Germ cell mutagenicity - Assessment	: Animal testing did not show any mutagenic effects.
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toluene:

Genotoxicity in vitro	: Test Type: Ames test Result: negative
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	: Method: OECD Test Guideline 476 Result: negative
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Genotoxicity in vivo	: Test Type: Chromosome aberration test in vitro Species: Rat Result: negative
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sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Genotoxicity in vitro	: Test Type: Chromosome aberration test in vitro Method: OECD Test Guideline 473 Result: negative
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	: Test Type: Ames test Method: OECD Test Guideline 471 Result: negative
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Genotoxicity in vivo : Remarks: No data available

Quartz (SiO₂):

Genotoxicity in vitro : Test Type: reverse mutation assay
Result: negative
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Rat
Method: OECD Test Guideline 474
Result: negative
Remarks: Based on data from similar materials

Carcinogenicity

Based on available data, the classification criteria are not met.

Product:

Carcinogenicity - Assessment : This product contains crystalline silica (quartz) in a non-respirable form. Inhalation of crystalline silica is unlikely to occur from exposure to this product. However, if granules are pulverized or crushed into a fine, respirable powder, silica exposure via inhalation is probable.

Components:

Sulfentrazone:

Species : Rat, male and female
Application Route : Ingestion
Exposure time : 2 Years
Result : negative

Species : Mouse, male and female
Application Route : Ingestion
Exposure time : 18 month(s)
Result : negative

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

sodium 2-[methylethylamino]ethane-1-sulphonate:

Remarks : This information is not available.

Quartz (SiO₂):

Carcinogenicity - Assessment : Human carcinogen.

IARC

Group 1: Carcinogenic to humans

Quartz (SiO₂)
(Silica dust, crystalline)

14808-60-7

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OSHA	OSHA specifically regulated carcinogen Quartz (SiO ₂) (crystalline silica)	14808-60-7
NTP	Known to be human carcinogen Quartz (SiO ₂) (Silica, Crystalline (Respirable Size))	14808-60-7

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Components:

Sulfentrazone:

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
General Toxicity Parent: NOEL: 13.7 - 16.2 mg/kg bw/day
General Toxicity F1: NOEL: 13.7 - 16.2 mg/kg bw/day
Symptoms: Maternal effects.

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: NOEL: 25 mg/kg bw/day
Developmental Toxicity: NOEL: 10 mg/kg bw/day
Method: EPA OPP 83-3

Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
General Toxicity Maternal: LOAEL: 50 mg/kg bw/day
Developmental Toxicity: LOAEL F1: 25 mg/kg bw/day
Symptoms: Skeletal malformations.
Target Organs: spleen
Method: EPA OPP 83-3

Cloransulam-methyl:

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

toluene:

Effects on fetal development : Species: Rat
Application Route: Inhalation
Result: Teratogenic effects.
Remarks: Adverse developmental effects were observed

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

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Effects on fertility	: Test Type: Fertility Species: Rat, male and female General Toxicity Parent: NOAEL: 1,000 mg/kg body weight Method: OECD Test Guideline 421 Remarks: No data available
Effects on fetal development	: Test Type: Pre-natal Species: Rat Application Route: Oral General Toxicity Maternal: NOAEL: 1,000 mg/kg body weight Embryo-fetal toxicity.: NOAEL: 1,000 mg/kg body weight Method: OECD Test Guideline 414
Reproductive toxicity - Assessment	: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT-single exposure

Based on available data, the classification criteria are not met.

Components:

Sulfentrazone:

Remarks : No significant adverse effects were reported

toluene:

Assessment : May cause drowsiness or dizziness.

Lignin, sodium salt:

Assessment : May cause respiratory irritation.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Product:

Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Components:

Sulfentrazone:

Target Organs : hematopoietic system, Nervous system
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

toluene:

Routes of exposure : Inhalation
Target Organs : inner ear
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

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Quartz (SiO₂):

Routes of exposure	: Inhalation
Target Organs	: Lungs
Assessment	: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Routes of exposure	: Inhalation
Target Organs	: Immune system, Kidney
Assessment	: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

Sulfentrazone:

Species	: Rat, male
NOAEL	: 19.9 mg/kg
LOAEL	: 65.8 mg/kg
Application Route	: Oral - feed
Exposure time	: 90-days
GLP	: yes
Target Organs	: hematopoietic system

Species	: Mouse, male
NOAEL	: 60 mg/kg
LOAEL	: 108.4 mg/kg
Application Route	: Oral - feed
Exposure time	: 90-days
Target Organs	: hematopoietic system

Species	: Dog, male
NOAEL	: 10 mg/kg
LOAEL	: 28 mg/kg
Application Route	: Oral - feed
Exposure time	: 90-days
Target Organs	: hematopoietic system, Liver

toluene:

Species	: Rat
NOAEL	: 625 mg/kg
Application Route	: Oral
Symptoms	: central nervous system effects

Species	: Rat
NOAEL	: 0.098 mg/l
Application Route	: Inhalation
Test atmosphere	: vapor

Species	: Rat
LOAEL	: 2.261 mg/l

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Application Route : Inhalation
Test atmosphere : vapor

sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Species : Rat
NOAEL : 1,000 mg/kg
Application Route : Oral
Exposure time : 28 d
Method : OECD Test Guideline 407

Quartz (SiO₂):

Species : Rat
LOAEC : 0.0025 mg/l
Application Route : Inhalation
Exposure time : 90 day
Method : OECD Test Guideline 413
Target Organs : Lungs
Remarks : Based on data from similar materials

Aspiration toxicity

Based on available data, the classification criteria are not met.

Components:

Sulfentrazone:

The substance does not have properties associated with aspiration hazard potential.

Cloransulam-methyl:

No aspiration toxicity classification

toluene:

May be fatal if swallowed and enters airways.

Neurological effects

Components:

Sulfentrazone:

Neurotoxicity observed in animals studies

Further information

Product:

Remarks : No data available

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Sulfentrazone:

- | | | |
|--|---|---|
| Toxicity to fish | : | LC50 (Oncorhynchus mykiss (rainbow trout)): > 120 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: EPA OPP 72-1

LC50 (Lepomis macrochirus (Bluegill sunfish)): 93.8 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: EPA OPP 72-1 |
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): 60.4 mg/l
Exposure time: 48 h
Test Type: flow-through test

NOEC (Daphnia magna (Water flea)): 14.1 mg/l
Exposure time: 48 h
Test Type: flow-through test |
| Toxicity to algae/aquatic plants | : | EC50 (algae): 32.8 mg/l
Exposure time: 72 h

EC50 (Pseudokirchneriella subcapitata (green algae)): 0.031 mg/l
Exposure time: 120 h

EC50 (Lemna gibba (duckweed)): 0.0288 mg/l
Exposure time: 14 d

EC50 (Navicula pelliculosa (Diatom)): 0.042 mg/l
Exposure time: 120 h |
| Toxicity to fish (Chronic toxicity) | : | NOEC (Fish): 5.9 mg/l
Exposure time: 21 d |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC (Crustaceans): 0.51 mg/l
Exposure time: 21 d |
| Toxicity to terrestrial organisms | : | LD50 (Anas platyrhynchos (Mallard duck)): > 5,620 ppm
End point: Acute oral toxicity

NOEL (Anas platyrhynchos (Mallard duck)): 3,160 ppm
End point: Acute oral toxicity

LD50 (Colinus virginianus (Bobwhite quail)): > 5,620 ppm
End point: Acute oral toxicity |

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NOEL (Colinus virginianus (Bobwhite quail)): 5,620 ppm
End point: Acute oral toxicity

NOEL (Colinus virginianus (Bobwhite quail)): > 100 ppm
End point: Reproduction Test

NOEL (Anas platyrhynchos (Mallard duck)): > 100 ppm
End point: Reproduction Test

LD50 (Apis mellifera (bees)): > 25 µg/bee
End point: Acute oral toxicity

LD50 (Apis mellifera (bees)): > 200 µg/bee
End point: Acute contact toxicity

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Cloransulam-methyl:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 86 mg/l
Exposure time: 96 h
Test Type: static test

LC50 (Pimephales promelas (fathead minnow)): > 32.4 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 40 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 41.5 - 2,700 mg/l
Exposure time: 5 d
Test Type: Growth inhibition

IC50 (Lemna gibba (duckweed)): 0.00156 mg/l
Exposure time: 7 d
Test Type: Growth inhibition
Method: OECD Test Guideline 201

IC50 (blue-green algae): > 0.0239 mg/l
Test Type: Growth inhibition
Method: OECD Test Guideline 201

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 10.1 mg/l
Exposure time: 33 d
Test Type: flow-through test

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 17.3 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to soil dwelling organisms : (Eisenia fetida (earthworms)): > 859 mg/kg
Exposure time: 14 d

Toxicity to terrestrial organisms : LD50 (Colinus virginianus (Bobwhite quail)): > 2,250 mg/kg

LD50 (Colinus virginianus (Bobwhite quail)): > 5,000 mg/kg

LD50 (Poephila guttata (zebra finch)): > 2,000 mg/kg

LD50 (Apis mellifera (bees)): > 25 µg/bee
Exposure time: 48 d

toluene:

Toxicity to fish : LC50 (Fish): 5.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50: 3.78 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants : NOEC (Skeletonema costatum (marine diatom)): 10 mg/l
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus kisutch (coho salmon)): 1.4 mg/l

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia sp.): 0.74 mg/l
Exposure time: 7 d

Toxicity to microorganisms : EC50 (Bacteria): 134 mg/l
Exposure time: 3 h

Lignin, sodium salt:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 770 mg/l
Exposure time: 96 h

NOEC (Pimephales promelas (fathead minnow)): 313 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : NOEC (Daphnia): 313 mg/l
Exposure time: 24 h

sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.32 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

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Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 5.76 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Desmodesmus subspicatus (green algae)): 117 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 2 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Toxicity to microorganisms	:	EC50 (activated sludge): > 1,000 mg/l Method: OECD Test Guideline 209

Quartz (SiO₂):

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 10,000 mg/l Exposure time: 72 h
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Persistence and degradability

Components:

Sulfentrazone:

Biodegradability	:	Result: Not readily biodegradable.
Stability in water	:	Degradation half life (DT50): 2.22 - 9.56 h
Photodegradation	:	Remarks: Decomposes rapidly in contact with light.

Cloransulam-methyl:

Biodegradability	:	Result: Not readily biodegradable.
Stability in water	:	Degradation half life: 335.34 d (25 °C) pH: 7

toluene:

Biodegradability	:	Result: Readily biodegradable.
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Lignin, sodium salt:

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 5 % Method: OECD Test Guideline 301E
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sodium 2-[methyleoleoylamino]ethane-1-sulphonate:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 80 % Exposure time: 28 d Method: OECD Test Guideline 301B
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Quartz (SiO₂):

Biodegradability : Result: Not biodegradable

Bioaccumulative potential

Components:

Sulfentrazone:

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
GLP: yes
Remarks: Low potential for bioaccumulation

Partition coefficient: n-octanol/water : Pow: 9.8
pH: 7

Cloransulam-methyl:

Bioaccumulation : Bioconcentration factor (BCF): 23.97
Method: QSAR

Partition coefficient: n-octanol/water : log Pow: 1.12

toluene:

Bioaccumulation : Bioconcentration factor (BCF): 90

Partition coefficient: n-octanol/water : log Pow: 2.73 (68 °F / 20 °C)

sodium 2-[methyleleoylamino]ethane-1-sulphonate:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 2.9
Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 1.36
Method: OECD Test Guideline 117
Remarks: Not applicable

Quartz (SiO₂):

Bioaccumulation : Remarks: Does not bioaccumulate.

Mobility in soil

Components:

Sulfentrazone:

Mobility : Medium: Water
Remarks: Predicted distribution to environmental compartments

Distribution among environ- : Koc: 43 ml/g, log Koc: 1.63

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courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	: UN 3077
Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Sulfentrazone, Cloransulam-methyl)
Class	: 9
Subsidiary risk	: ENVIRONM.
Packing group	: III
Labels	: 9 (ENVIRONM.)
Environmentally hazardous	: yes

IATA-DGR

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

IMDG-Code

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

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Domestic regulation

49 CFR

Not regulated as a dangerous good

Remarks : Shipment by ground under DOT is non-regulated for non-bulk packaging; however it may be shipped per the applicable haz-

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ard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

Special precautions for user

Remarks : 49CFR: no dangerous good in non-bulk packaging

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

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
toluene	108-88-3	100	100 (F005)
dichloromethane	75-09-2	10	10 (F001)
dichloromethane	75-09-2	10	10 (F002)
methanol	67-56-1	100	100 (F003)

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Combustible dust
Acute toxicity (any route of exposure)
Carcinogenicity
Reproductive toxicity
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:

toluene	108-88-3	>= 1 - < 5 %
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Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

toluene	108-88-3	>= 1 - < 5 %
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This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

toluene	108-88-3	>= 1 - < 5 %
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Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

toluene	108-88-3	>= 1 - < 5 %
---------	----------	--------------

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

toluene	108-88-3	>= 1 - < 5 %
---------	----------	--------------

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

toluene	108-88-3	>= 1 - < 5 %
---------	----------	--------------

This product contains the following priority pollutants related to the U.S. Clean Water Act:

toluene	108-88-3	>= 1 - < 5 %
---------	----------	--------------

US State Regulations

Massachusetts Right To Know

toluene	108-88-3
Quartz (SiO ₂)	14808-60-7
dichloromethane	75-09-2

Pennsylvania Right To Know

Sulfentrazone	122836-35-5
Sodium lignosulfonate	8061-51-6
Cloransulam-methyl	147150-35-4
toluene	108-88-3
Lignin, sodium salt	37203-80-8
Quartz (SiO ₂)	14808-60-7
dichloromethane	75-09-2
methanol	67-56-1

Maine Chemicals of High Concern

toluene	108-88-3
Quartz (SiO ₂)	14808-60-7

Vermont Chemicals of High Concern

toluene	108-88-3
dichloromethane	75-09-2

Washington Chemicals of High Concern

toluene	108-88-3
dichloromethane	75-09-2

California Prop. 65

WARNING: This product can expose you to chemicals including Quartz (SiO₂), dichloromethane, which is/are known to the State of California to cause cancer, and toluene, 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.

California List of Hazardous Substances

toluene	108-88-3
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California Permissible Exposure Limits for Chemical Contaminants

toluene	108-88-3
Quartz (SiO ₂)	14808-60-7

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California Regulated Carcinogens

Quartz (SiO₂)

14808-60-7

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

TW TCSI	: Not in compliance with the inventory
US TSCA	: Product contains substance(s) not listed on TSCA inventory.
AU AIIC	: Not in compliance with the inventory
CA. DSL	: This product contains chemical substance(s) exempt from CEPA DSL Inventory requirements. It is regulated as a pesticide subject to Pest Control Products Act (PCPA) requirements. Read the PCPA label, authorized under the Pest Control Products Act, prior to using or handling this pest control product.
JP ENCS	: Not in compliance with the inventory
JP ISHL	: Not in compliance with the inventory
KR KECI	: Not in compliance with the inventory
PH PICCS	: Not in compliance with the inventory
CN IECSC	: Not in compliance with the inventory
NZ NZIoC	: Not in compliance with the inventory
TH TECI	: Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

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.

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

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FIFRA information

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:

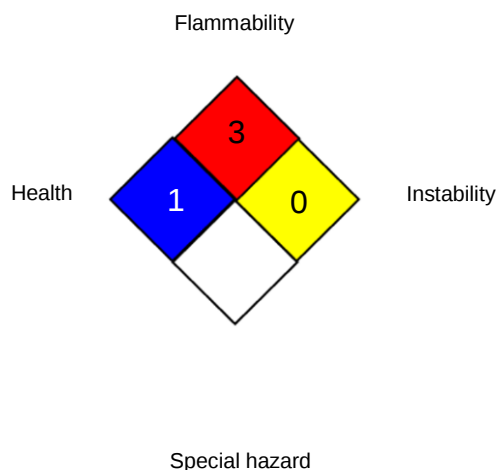
CAUTION

Causes eye irritation Harmful if inhaled Harmful if swallowed Harmful if absorbed through the skin. This product is toxic to aquatic invertebrates.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV / CED:

HEALTH	*	2
FLAMMABILITY		3
PHYSICAL HAZARD		0

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	: ACGIH - Biological Exposure Indices (BEI)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
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-2	: USA. Occupational Exposure Limits (OSHA) - Table Z-2
OSHA Z-3	: USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts

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ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-2 / TWA	:	8-hour time weighted average
OSHA Z-2 / CEIL	:	Acceptable ceiling concentration
OSHA Z-2 / Peak	:	Acceptable maximum peak above the acceptable ceiling con- centration for an 8-hr shift
OSHA Z-3 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardization; 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 Organization 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, Authorization 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; TECI - Thailand Existing Chemicals 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

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Person who prepared the SDS:

FMC Corporation

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End of Material Safety Data Sheet