

SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard



Solitare Herbicide

Version	Revision Date:	SDS Number:	Date of last issue: 01/23/2026
1.2	04/09/2026	11548343-00003	Date of first issue: 06/24/2025

SECTION 1. IDENTIFICATION

Product name : Solitare Herbicide
Product code : UVP: DU00000162 Specification: 102D00000476 EPA Registration No: 101563-310

Manufacturer or supplier's details

Company name of supplier : Environmental Science U.S. LLC.
Address : 5000 Centregreen Way, Suite 400
Cary NC 27513
Telephone : 1-800-331-2867
Emergency telephone : +1 703-741-5970
E-mail address : uscontact@envu.com

Recommended use of the chemical and restrictions on use

Recommended use : Herbicide
Restrictions on use : For professional users only.

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

Acute toxicity (Oral) : Category 4
Acute toxicity (Inhalation) : Category 4
Eye irritation : Category 2A
Reproductive toxicity : Category 1B
Specific target organ toxicity : Category 2 (hematopoietic system)
- repeated exposure (Oral)
Specific target organ toxicity : Category 2 (hematopoietic system)
- repeated exposure (Inhalation)

Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal Word : Danger

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Hazard Statements : May form combustible dust concentrations in air.
H302 + H332 Harmful if swallowed or if inhaled.
H319 Causes serious eye irritation.
H360D May damage the unborn child.
H373 May cause damage to organs (hematopoietic system) through prolonged or repeated exposure if swallowed.
H373 May cause damage to organs (hematopoietic system) through prolonged or repeated exposure if inhaled.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing dust, fume, gas, mist, vapors or spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:
P301 + P312 + P330 IF SWALLOWED: Call a doctor if you feel unwell. Rinse mouth.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical attention.
P337 + P313 If eye irritation persists: Get medical attention.

Storage:
P405 Store locked up.

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
3,7-Dichloroquinoline-8-carboxylic acid	84087-01-4*	56.25	-
Sulfentrazone	122836-35-5*	18.75	-
Alkylnaphthalenesulfonic acid, polymer with formalde-	68425-94-5*	>= 5 - < 10	-

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hyde, sodium salt			
Kaolin	1332-58-7*	$\geq 5 - < 10$	-
Sodium dimethylnaphthalenesulphonate	27178-87-6*	$\geq 1 - < 3$	-
Sodium 2-[methylethylamino]ethane-1-sulphonate	137-20-2*	$\geq 1 - < 3$	-
Toluene	108-88-3*	$\geq 0.3 - < 1$	-

* Indicates that the identifier is a CAS No.

SECTION 4. FIRST AID MEASURES

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.
- If inhaled : If inhaled, remove to fresh air.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention.
- If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : The following symptoms may occur:
Convulsions
Lachrymation
Lack of coordination
Nose bleeding
Harmful if swallowed or if inhaled.
Causes serious eye irritation.
May damage the unborn child.
May cause damage to organs through prolonged or repeated exposure if swallowed.
May cause damage to organs through prolonged or repeated exposure if inhaled.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
- Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

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- | | |
|--|---|
| Suitable extinguishing media | : Water spray
Alcohol-resistant foam
Carbon dioxide (CO ₂)
Dry chemical |
| Unsuitable extinguishing media | : High volume water jet |
| Specific hazards during fire fighting | : Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Do not use a solid water stream as it may scatter and spread fire.
Exposure to combustion products may be a hazard to health. |
| Hazardous combustion products | : Carbon oxides
Nitrogen oxides (NO _x)
Chlorine compounds
Fluorine compounds
Sulfur oxides
Metal oxides |
| Specific extinguishing methods | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area. |
| Special protective equipment for fire-fighters | : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|--|
| Personal precautions, protective equipment and emergency procedures | : Use personal protective equipment.
Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8). |
| Environmental precautions | : Avoid release to the environment.
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. |
| Methods and materials for containment and cleaning up | : Surround spill with absorbents and place a damp covering over the area to minimize entry of the material into the air.
Add excess liquid to allow the material to enter into solution.
Soak up with inert absorbent material.
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released. |

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sed into the atmosphere in sufficient concentration.
Clean up remaining materials from spill with suitable absorbent.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

- | | | |
|-----------------------------|---|--|
| Technical measures | : | Static electricity may accumulate and ignite suspended dust causing an explosion.
Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. |
| Local/Total ventilation | : | If sufficient ventilation is unavailable, use with local exhaust ventilation. |
| Advice on safe handling | : | Do not get on skin or clothing.
Avoid breathing dust, fume, gas, mist, vapors or spray.
Do not swallow.
Do not get in eyes.
Wash skin thoroughly after handling.
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Keep container tightly closed.
Minimize dust generation and accumulation.
Keep container closed when not in use.
Keep away from heat and sources of ignition.
Take precautionary measures against static discharges.
Do not eat, drink or smoke when using this product.
Take care to prevent spills, waste and minimize release to the environment. |
| Conditions for safe storage | : | Keep in properly labeled containers.
Store locked up.
Keep tightly closed.
Keep in a cool, well-ventilated place.
Store in accordance with the particular national regulations. |
| Materials to avoid | : | Do not store with the following product types:
Strong oxidizing agents
Self-reactive substances and mixtures
Organic peroxides
Explosives
Gases |

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of	Control parameters / Permissible	Basis
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		exposure)	concentration	
Kaolin	1332-58-7	TWA (Respirable particulate matter)	2 mg/m ³	ACGIH
		TWA (Respirable)	5 mg/m ³	NIOSH REL
		TWA (total)	10 mg/m ³	NIOSH REL
		TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA (respirable fraction)	5 mg/m ³	OSHA Z-1
Toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m ³	NIOSH REL
		ST	150 ppm 560 mg/m ³	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2

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
		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

Engineering measures

: Minimize workplace exposure concentrations.
Apply measures to prevent dust explosions.
Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).
If sufficient ventilation is unavailable, use with local exhaust ventilation.

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Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Eye protection : Wear the following personal protective equipment: Safety goggles

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential. Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : granules

Color : No data available

Odor : No data available

Odor Threshold : No data available

pH : 4.3

Melting point/freezing point : No data available

Initial boiling point and boiling range : No data available

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Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	May form explosive dust-air mixture.
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
Relative density	:	32 - 35.4
Density	:	0.513 - 0.567 g/cm ³
Solubility(ies) Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	Not applicable
Decomposition temperature	:	No data available
Viscosity Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle characteristics Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	May form explosive dust-air mixture. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks. Avoid dust formation.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

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SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Harmful if swallowed or if inhaled.

Product:

Acute oral toxicity	:	Acute toxicity estimate: 1,916 mg/kg Method: Calculation method
Acute inhalation toxicity	:	LC50 (Rat): > 2.06 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Acute oral toxicity	:	LD50 (Rat): 2,680 mg/kg Method: OECD Test Guideline 401 Remarks: The test was conducted equivalent or similar to guideline
Acute inhalation toxicity	:	LC50 (Rat): > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Remarks: The test was conducted according to guideline
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Remarks: The test was conducted according to guideline

Sulfentrazone:

Acute oral toxicity	:	LD50 (Mouse, female): 701.8 mg/kg Method: OPPTS 870.1100 Remarks: The test was conducted according to guideline
Acute inhalation toxicity	:	LC50 (Rat): > 5.13 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OPPTS 870.1300 Remarks: The test was conducted according to guideline
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg

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Method: OPPTS 870.1200

Remarks: The test was conducted according to guideline

Alkyl naphthalenesulfonic acid, polymer with formaldehyde, sodium salt:

Acute oral toxicity : LD50 (Rat): > 4,500 mg/kg

Kaolin:

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

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

Sodium dimethylnaphthalenesulphonate:

Acute oral toxicity : LD50 (Rat, female): > 500 - 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: The test was conducted equivalent or similar to guideline

Based on data from similar materials

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

Method: OECD Test Guideline 402

Remarks: The test was conducted equivalent or similar to guideline

Based on data from similar materials

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

Toluene:

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

Acute inhalation toxicity : LC50 (Rat): 28.1 mg/l

Exposure time: 4 h

Test atmosphere: vapor

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

Skin corrosion/irritation

Not classified based on available information.

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

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Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	No skin irritation
Remarks	:	The test was conducted according to guideline

Sulfentrazone:

Species	:	Rabbit
Method	:	OPPTS 870.2500
Result	:	No skin irritation
Remarks	:	The test was conducted according to guideline

Kaolin:

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

Sodium dimethylnaphthalenesulphonate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Skin irritation
Remarks	:	The test was conducted according to guideline Based on data from similar materials

Sodium 2-[methyleoylamino]ethane-1-sulphonate:

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

Toluene:

Species	:	Rabbit
Method	:	Directive 67/548/EEC, Annex V, B.4.
Result	:	Skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405
Remarks	:	The test was conducted according to guideline

Alkyl naphthalenesulfonic acid, polymer with formaldehyde, sodium salt:

Result	:	Irritation to eyes, reversing within 21 days
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Kaolin:

Species	:	Rabbit
Result	:	No eye irritation

Sodium dimethylnaphthalenesulphonate:

Species	:	Rabbit
Result	:	Irreversible effects on the eye
Method	:	OECD Test Guideline 405
Remarks	:	The test was conducted according to guideline Based on data from similar materials

Sodium 2-[methyloleoylamino]ethane-1-sulphonate:

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

Toluene:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Product:

Assessment	:	Does not cause skin sensitization.
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Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Test Type	:	Maximization Test
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Method	:	OECD Test Guideline 406
Result	:	positive
Remarks	:	The test was conducted according to guideline

Assessment	:	Probability or evidence of skin sensitization in humans
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Sulfentrazone:

Test Type	:	Maximization Type
Routes of exposure	:	Skin contact
Species	:	Guinea pig
Method	:	OPPTS 870.2600
Result	:	negative

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Remarks : The test was conducted according to guideline

Sodium dimethylnaphthalenesulphonate:

Test Type : Buehler Test
Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative
Remarks : The test was conducted according to guideline
Based on data from similar materials

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

Test Type : Buehler Test
Routes of exposure : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative

Toluene:

Test Type : Maximization Test
Routes of exposure : Skin contact
Species : Guinea pig
Method : Directive 67/548/EEC, Annex V, B.6.
Result : negative

Germ cell mutagenicity

Not classified based on available information.

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative
Remarks: The test was conducted according to guideline

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative
Remarks: The test was conducted according to guideline

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive
Remarks: The test was conducted according to guideline

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Hamster
Application Route: Ingestion
Method: OECD Test Guideline 475

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Result: negative
Remarks: The test was conducted according to guideline

Sulfentrazone:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OPPTS 870.5100
Result: negative
Remarks: The test was conducted according to guideline

Test Type: In vitro mammalian cell gene mutation test
Method: OPPTS 870.5300
Result: negative
Remarks: The test was conducted according to guideline

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Intraperitoneal injection
Method: OPPTS 870.5395
Result: negative
Remarks: The test was conducted according to guideline

Sodium dimethylnaphthalenesulphonate:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative
Remarks: The test was conducted according to guideline
Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative
Remarks: The test was conducted according to guideline
Based on data from similar materials

Test Type: in vitro micronucleus test
Method: OECD Test Guideline 487
Result: negative
Remarks: The test was conducted according to guideline
Based on data from similar materials

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

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473

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Result: negative

Toluene:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Result: negative

Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Rat
Application Route: Intraperitoneal injection
Result: negative

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Application Route: inhalation (vapor)
Method: OECD Test Guideline 478
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Species : Rat
Application Route : Ingestion
Exposure time : 78 weeks
Method : OECD Test Guideline 453
Result : negative
Remarks : The test was conducted according to guideline

Sulfentrazone:

Species : Mouse
Application Route : Ingestion
Exposure time : 2 Years
Method : OPPTS 870.4200
Result : negative
Remarks : The test was conducted according to guideline

Toluene:

Species : Rat
Application Route : inhalation (vapor)
Exposure time : 103 weeks
Result : negative

Species : Mouse
Application Route : Skin contact
Exposure time : 24 Months

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Result : negative

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

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

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

May damage the unborn child.

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 416
Result: negative
Remarks: The test was conducted according to guideline

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative
Remarks: The test was conducted according to guideline

Sulfentrazone:

Effects on fetal development : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: Ingestion
Method: OPPTS 870.3800
Result: positive
Remarks: The test was conducted according to guideline

Test Type: Embryo-fetal development
Species: Rat
Application Route: Skin contact
Method: OPPTS 870.3700
Result: positive
Remarks: The test was conducted according to guideline

Reproductive toxicity - Assessment : Clear evidence of adverse effects on development, based on animal experiments.

Sodium dimethylnaphthalenesulphonate:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test

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Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative
Remarks: The test was conducted according to guideline
Based on data from similar materials

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative
Remarks: The test was conducted according to guideline
Based on data from similar materials

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

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 421
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

Toluene:

Effects on fertility : Test Type: Two-generation reproduction toxicity study
Species: Rat
Application Route: inhalation (vapor)
Method: OECD Test Guideline 416
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development
Species: Rat
Application Route: inhalation (vapor)
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

STOT-single exposure

Not classified based on available information.

Components:

Toluene:

Assessment : May cause drowsiness or dizziness.

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STOT-repeated exposure

May cause damage to organs (hematopoietic system) through prolonged or repeated exposure if swallowed.

May cause damage to organs (hematopoietic system) through prolonged or repeated exposure if inhaled.

Components:

Sulfentrazone:

Routes of exposure	: Ingestion
Target Organs	: hematopoietic system
Assessment	: Shown to produce significant health effects in animals at concentrations of >10 to 100 mg/kg bw.

Routes of exposure	: inhalation (dust/mist/fume)
Target Organs	: hematopoietic system
Assessment	: Shown to produce significant health effects in animals at concentrations of >10 to 100 mg/kg bw.

Toluene:

Routes of exposure	: Inhalation
Target Organs	: Central nervous system
Assessment	: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Species	: Rat
NOAEL	: 930 mg/kg
Application Route	: Ingestion
Exposure time	: 90 Days
Method	: OECD Test Guideline 408
Remarks	: The test was conducted according to guideline

Sulfentrazone:

Species	: Dog, male
NOAEL	: 28 mg/kg
LOAEL	: 57 mg/kg
Application Route	: Ingestion
Exposure time	: 90 Days
Method	: OPPTS 870.3150
Remarks	: The test was conducted according to guideline

Species	: Rat
NOAEL	: 0.256 mg/kg
LOAEL	: 1.71 mg/kg
Application Route	: inhalation (dust/mist/fume)
Exposure time	: 26 Days

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Method : OPPTS 870.3465
Remarks : The test was conducted according to guideline

Species : Rabbit
NOAEL : $\geq 1,000$ mg/kg
Application Route : Skin contact
Exposure time : 28 Days
Method : OPPTS 870.3200
Remarks : The test was conducted according to guideline

Sodium dimethylnaphthalenesulphonate:

Species : Rat
LOAEL : > 300 mg/kg
Application Route : Ingestion
Exposure time : 29 - 47 Days
Method : OECD Test Guideline 422
Remarks : The test was conducted according to guideline
Based on data from similar materials

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

Species : Rat
NOAEL : 750 mg/kg
Application Route : Ingestion
Exposure time : 90 Days
Method : OECD Test Guideline 408

Toluene:

Species : Rat
LOAEL : 1.875 mg/l
Application Route : inhalation (vapor)
Exposure time : 6 Months

Species : Rat
NOAEL : 625 mg/kg
Application Route : Ingestion
Exposure time : 13 Weeks

Aspiration toxicity

Not classified based on available information.

Components:

Toluene:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Experience with human exposure

Components:

Toluene:

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Inhalation : Target Organs: Central nervous system
Symptoms: Neurological disorders

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 99.7 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: The test was conducted according to guideline

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

Toxicity to algae/aquatic : ErC50: 43.6 mg/l
plants
Exposure time: 96 h

NOEC: 19.3 mg/l
Exposure time: 96 h

Toxicity to fish (Chronic tox- : NOEC (Pimephales promelas (fathead minnow)): 31 mg/l
icity)
Exposure time: 38 d

Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): 110 mg/l
aquatic invertebrates (Chron-
ic toxicity)
Exposure time: 21 d

Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
Exposure time: 180 min
Method: OECD Test Guideline 209
Remarks: The test was conducted according to guideline

Sulfentrazone:

Toxicity to fish : LC50 (Lepomis macrochirus (Bluegill sunfish)): 93.8 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 60.4 mg/l
aquatic invertebrates
Exposure time: 48 h

Toxicity to algae/aquatic : ErC50 (Pseudokirchneriella subcapitata (green algae)): 0.033
plants
mg/l
Exposure time: 120 h

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.03
mg/l
Exposure time: 120 h

Toxicity to fish (Chronic tox- : NOEC (Oncorhynchus mykiss (rainbow trout)): 2.95 mg/l

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icity) Exposure time: 99 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.2 mg/l
Exposure time: 21 d

Alkyl naphthalenesulfonic acid, polymer with formaldehyde, sodium salt:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 10 - 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Based on data from similar materials

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

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

EC10 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): > 1 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211
Remarks: Based on data from similar materials

Sodium dimethylnaphthalenesulphonate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 10 - 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: The test was conducted according to guideline
Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 10 - 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: The test was conducted according to guideline
Based on data from similar materials

Toxicity to algae/aquatic plants : ErC50 (Raphidocelis subcapitata (freshwater green alga)): > 100 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: The test was conducted according to guideline
Based on data from similar materials

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EC10 (Raphidocelis subcapitata (freshwater green alga)): > 1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: The test was conducted according to guideline
Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): > 1 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211
Remarks: The test was conducted according to guideline
Based on data from similar materials

Toxicity to microorganisms : EC10 (activated sludge): > 1 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
Remarks: The test was conducted according to guideline
Based on data from similar materials

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

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 : ErC50 (Desmodesmus subspicatus (green algae)): 117 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 11.1 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 2.35 mg/l
Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Toluene:

Toxicity to fish : LC50 (Oncorhynchus kisutch (coho salmon)): 5.5 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Ceriodaphnia dubia (water flea)): 3.78 mg/l
Exposure time: 48 h

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Toxicity to algae/aquatic plants	:	NOEC (Skeletonektonema costatum (marine diatom)): 10 mg/l Exposure time: 72 h
Toxicity to fish (Chronic toxicity)	:	NOEC (Oncorhynchus kisutch (coho salmon)): 1.39 mg/l Exposure time: 40 d
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Ceriodaphnia dubia (water flea)): 0.74 mg/l Exposure time: 7 d
Toxicity to microorganisms	:	EC50 (Nitrosomonas sp.): 84 mg/l Exposure time: 24 h

Persistence and degradability

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Biodegradability	:	Result: Not readily biodegradable. Biodegradation: < 10 % Exposure time: 28 d Method: OECD Test Guideline 301A Remarks: The test was conducted according to guideline
Biodegradation Simulation Tests	:	Environmental Compartment: Soil Value type: DT50 Value: > 138 d Temperature: 22 °C

Sulfentrazone:

Biodegradation Simulation Tests	:	Environmental Compartment: Soil Value type: DT50 Value: 400 d
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Alkyl naphthalenesulfonic acid, polymer with formaldehyde, sodium salt:

Biodegradability	:	Result: Not readily biodegradable. Remarks: Based on data from similar materials
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Sodium dimethylnaphthalenesulphonate:

Biodegradability	:	Result: Not readily biodegradable. Method: OECD Test Guideline 301D Remarks: The test was conducted according to guideline Based on data from similar materials
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Sodium 2-[methylethylamino]ethane-1-sulphonate:

Biodegradability	:	Result: Readily biodegradable. Biodegradation: 83 % Exposure time: 28 d Method: OECD Test Guideline 301B
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Toluene:

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Biodegradability : Result: Readily biodegradable.
Biodegradation: 80 %
Exposure time: 20 d

Bioaccumulative potential

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): ≤ 0.52
Remarks: No test guideline followed

Partition coefficient: n-octanol/water : log Pow: -0.74
Method: OECD Test Guideline 117
Remarks: The test was conducted according to guideline

Sulfentrazone:

Partition coefficient: n-octanol/water : log Pow: 0.99

Sodium dimethylnaphthalenesulphonate:

Partition coefficient: n-octanol/water : log Pow: < 4
Remarks: Expert judgment

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

Partition coefficient: n-octanol/water : log Pow: 1.36
Remarks: Calculation

Toluene:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)
Bioconcentration factor (BCF): 90

Partition coefficient: n-octanol/water : log Pow: 2.73

Mobility in soil

Components:

3,7-Dichloroquinoline-8-carboxylic acid:

Distribution among environmental compartments : log Koc: 2.85 - 3.06
Method: OECD Test Guideline 106
Remarks: The test was conducted according to guideline

Sulfentrazone:

Distribution among environmental compartments : log Koc: 1.63

Other adverse effects

No data available

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Endocrine disrupting properties

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	It is best to use all of the product in accordance with label directions. If it is necessary to dispose of unused product, please follow container label instructions and applicable local guidelines. Do not dispose of waste into sewer.
Contaminated packaging	:	Follow advice on product label and/or leaflet. Empty containers retain residue and can be dangerous. 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)
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. (Sulfentrazone)
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)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

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Transport in bulk according to IMO instruments

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3077
Proper shipping name : Environmentally hazardous substance, solid, n.o.s. (Sulfentrazone)
Class : 9
Packing group : III
Labels : CLASS 9
ERG Code : 171
Marine pollutant : yes(Sulfentrazone)
Remarks : Above applies only to containers over 119 gallons (450 liters) in case of liquids, or 882 lbs. (400 kg) in case of solids. Shipment by ground under DOT is non-regulated for non-bulk packaging; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

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

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Toluene	108-88-3	1000	106666

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)
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Serious eye damage or eye irritation

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

3,7-Dichloroquinoline-8-carboxylic acid

84087-01-4

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Sulfentrazone	122836-35-5
Lignosulfonic acid, sodium salt	8061-51-6
Alkyl naphthalenesulfonic acid, polymer with formaldehyde, sodium salt	68425-94-5
Kaolin	1332-58-7
Toluene	108-88-3

California Prop. 65

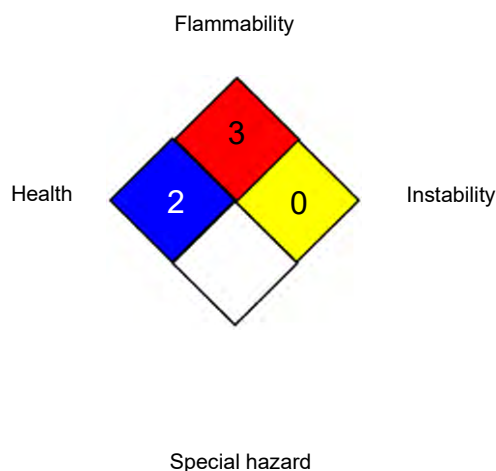
WARNING: This product can expose you to chemicals including Toluene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. **California Permissible Exposure Limits for Chemical Contaminants**

Kaolin	1332-58-7
Active substance	: 56.25 %
	3,7-Dichloroquinoline-8-carboxylic acid
	18.75 %
	Sulfentrazone

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 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
ACGIH / TWA	: 8-hour, time-weighted average

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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 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 concentration for an 8-hr shift

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; TECL - 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

Sources of key data used to compile the Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 04/09/2026

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be

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considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

US / Z8