

## **SAFETY DATA SHEETS**

**This SDS packet was issued with item:**

078928005

**The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).**

078927998 078928000 078928001 078928002 078928003 078928004

Bravecto<sup>®</sup> spot-on solution

## Section 1: Identification of the Substance and Supplier

Product name	<b>Bravecto spot-on solution</b>
Recommended use	For spot-on flea and tick treatment in cats and dogs
Company details	<b>MSD Animal Health, 33 Whakatiki Street, Upper Hutt</b>  Phone: 0800 800 543 Fax: 0800 808 100 Website: <a href="http://www.msd-animal-health.co.nz">www.msd-animal-health.co.nz</a> Hours: 8 am – 5 pm, Mon – Fri
Emergency telephone	<b>0800 764 766 (0800 POISON) 24 hours human health</b> <b>0800 243 622 (0800 CHEMCALL) 24 hours</b>
Date of preparation	October 2016

## Section 2: Hazards Identification

Hazard classifications	3.1B, 6.1E (dermal), 6.3A, 6.4A, 6.8A, 9.1A
Priority identifiers	<b>DANGER</b> <b>Ecotoxic</b>
Secondary identifier	3.1B Highly flammable liquid and vapour – keep away from sources of ignition 6.1E May be harmful if absorbed through the skin. 6.3A May cause skin irritation 6.4A May cause eye irritation. 6.8A May damage fertility or the unborn child from repeated oral exposure. 9.1A Very toxic to aquatic organisms with long-lasting effects.
Risk & Safety Phrases	R21 Harmful by in contact with skin. R11 Highly flammable R67 Vapours may cause drowsiness and dizziness R50 Very toxic to aquatic organisms

## Section 3: Composition/Information on Ingredients

Chemical name	CAS number	Concentration
Fluralaner	846731-61-3	13.64%
Dimethylacetamide (DMA)	127-15-5	30 – 40%
Diethyltoluamide (DEET)	134-62-3	13.2%
Acetone	67-64-1	10 – 20%

#### Section 4: First Aid Measures

<b>Necessary first aid measures</b>	<p><b>SKIN CONTACT</b> In case of skin contact, carefully remove any contaminated clothing, including shoes. Remove as much as possible using an absorbent material such as tissue paper or cotton. Wash skin thoroughly with soap and water. If there is any remaining sticky residue – this can be removed with alcohol (eg rubbing alcohol or alcohol based skin disinfectant gel). If irritation or symptoms occur or persist, consult a doctor.</p> <p><b>EYE CONTACT</b> In case of eye contact, immediately rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. If irritation occurs or persists, consult a doctor.</p> <p><b>INGESTION</b> Rinse mouth with water and drink a glass of water. DO NOT induce vomiting unless under the direction of a qualified medical professional or National Poisons Centre. If symptoms persist, consult a doctor.</p> <p><b>INHALATION</b> Remove affected person promptly to fresh air. If any trouble breathing, get immediate medical attention. Administer artificial respiration if breathing has ceased.</p>
<b>Required instructions</b>	For advice contact the National Poisons Centre 0800 POISON (0800 764 766) or a doctor.

#### Section 5: Fire Fighting Measures

<b>Type of hazard</b>	Flammable (contains Acetone and Dimethylacetamide (DMA))
<b>Fire hazard properties</b>	Burning can produce carbon monoxide and/or carbon dioxide
<b>Regulatory requirements</b>	Two fire extinguishers are required where quantities greater than 250L are present.
<b>Extinguishing media and methods</b>	Carbon dioxide (CO <sub>2</sub> ), extinguishing powder or water spray.
<b>Hazchem code</b>	2YE (Contain spillage)
<b>Recommended protective clothing</b>	Wear full protective clothing and self-contained breathing apparatus (SCBA).

#### Section 6: Accidental Release Measures

<b>Emergency procedures</b>	Wear chemical resistant gloves and overalls, facemask or goggles. Prevent further spillage. Adsorb spilled product with non-combustible absorbent material and place in sealable container for disposal. Wash down affected area with water plus detergent. Absorb and collect washings and place in the same sealable container for disposal. Seek advice from the local authority regarding disposal. Avoid contamination of any water source with product or empty container.
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#### Section 7: Handling and Storage

<b>Precautions for safe handling</b>	Avoid contact with skin, eyes, and mucosa. Keep containers adequately sealed during material transfer, transport, or when not in use. See Section 8 (Exposure Controls) for additional guidance.
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**Bravecto<sup>®</sup> spot-on solution**

<b>Regulatory requirements</b>	Signage required where quantities greater than 100L are present. Emergency Plan required where quantities greater than 100L are present. Two fire extinguishers are required where quantities greater than 250L are present. Location certificate required where quantities greater than 100L are present. Hazardous Atmosphere Zone applicable where quantities greater than 100L are present.
<b>Handling practices</b>	Avoid contact with skin. Keep containers adequately sealed during material transfer, transport, or when not in use.
<b>Approved handlers</b>	Required where quantities greater than 500L are present.
<b>Conditions for safe storage</b>	Store in original packaging. Keep packaging sealed when not in use. Keep out of reach of children. Keep away from heat, sparks, open flame or other sources of ignition.
<b>Store site requirements</b>	Store at room temperature away from foodstuffs in the original package to protect from moisture. Do not refrigerate. Keep away from heat, sparks, open flames, and direct sunlight. Avoid extreme heat. Not to be stored with explosives, flammable gases in bulk, poisonous gasses, spontaneously combustible substances, oxidizing agents, organic peroxides or radioactive substances.
<b>Packaging</b>	Schedule 4

**Section 8: Exposure Control/Personal Protection**

<b>Workplace exposure standards</b>	No WESs are set for this product.
<b>Application in the workplace</b>	Ensure adequate ventilation. Keep container sealed when not in use.
<b>Exposure standards outside the workplace</b>	TEL – not applicable
<b>Personal protection</b>	Wear chemical resistant gloves, facemask or goggles.

**Section 9: Physical and Chemical Properties**

Appearance	Yellow liquid
Boiling Point	103°C
Melting/Softening point	Not determined
Vapour Pressure	67 hPA @ 20°C, 1013 hPA @ 101°C
Specific Gravity	Approx. 1.063
Solubility (H <sub>2</sub> O)	Not determined for mixture
Percent Volatiles	Not determined
Flash Point	2°C
Evaporation Rate	Not determined

Bravecto<sup>®</sup> spot-on solution**Section 10: Stability and Reactivity**

<b>Stability of the substance</b>	Stable under normal conditions. No hazardous reactions known.
<b>Conditions to avoid</b>	Keep away from heat, sparks, open flame and direct sunlight.
<b>Material to avoid</b>	Avoid food products.
<b>Hazardous decomposition products</b>	No dangerous decomposition is expected if used according to manufacturer's specifications.

**Section 11: Toxicological Information****Acute effects for individual ingredients only**

ORAL	Fluralaner: LD50 >2000 mg/kg (rat); Dimethylacetamide: LD50 2250–10,000 mg/kg (rat); 2600–4900 mg/kg (mouse) Acetone: Oral LD50: 5800 mg/kg (rat)
DERMAL	Fluralaner: LD50 >2000 mg/kg (rat); Dimethylacetamide: LD50: 2200-5000 mg/kg (rabbit), 7500 mg/kg (rat) <940 mg/kg (guinea pig) Acetone was mildly irritating to the skin of rabbits when dosed at 500 mg for 24 hours in a Standard Draize Test. DEET caused minimal to moderate transient dermal irritation in animals, which cleared by day 7.
EYE	Dimethylacetamide produced mild, reversible corneal injury in the eyes of rabbits, mice and dogs. Acetone was moderately irritating to rabbit eyes when dosed at 20 mg for 24 24 hours in a Standard Draize Test.
TEL	No TEL is set for this substance at this time.

**Chronic/long term effects for individual ingredients only**

Dimethylacetamide was given to rats and rabbits either orally, dermally or by inhalation. Dimethylacetamide caused fetal death or growth retardation in rats at an inhalation dose level of 282 ppm, but not at 100 ppm. There was not an increase in birth defects seen in this study, even at doses toxic to the dam. At high inhalation doses (2000 – 2500 ppm) in rats and (300 – 480 ppm) in mice, dimethylacetamide was associated with reversible testicular toxicity.

**Section 12: Environmental Information****Effects for individual ingredients only**

AQUATIC	Fluralaner: 96-hr LC50 (Common carp): 2 mg/L 48-hr EC50 (Daphnia magna): 0.0001 - 0.01 mg/L 72-hr EC50 (P. subcapitata): >10 mg/L  DEET: 96-hr LC50 (Rainbow Trout): 75 mg/L 48-hr EC50 (Daphnia): 75 mg/L
EEL	Not applicable

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### Section 13: Disposal Considerations

<b>Disposal information</b>	<b>Disposal of Product and Container</b> Dispose of used pipette and sachet by wrapping with paper and putting in household waste or in a suitable landfill. Avoid contamination of any water source or the environment with product or empty container.
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### Section 14: Transport Information

<b>Relevant information</b>	UN1090 Acetone solution. Class 3 Limited quantities/Consumer commodity 5L Tracking not required.  UN3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Isoxazoline derivative – Fluralaner and Diethyltoluamide (DEET)) Class 9 Limited quantities/Consumer commodity: 5L
<b>Other requirements</b>	Refer to Haznote.

### Section 15: Regulatory Information

<b>Regulatory status</b>	ACVM Registration No: A11261 For conditions of registration see <a href="http://www.foodsafety.govt.nz">www.foodsafety.govt.nz</a>  HSNO Approval Code: HSR100757. For a full listing of controls see <a href="http://www.epa.govt.nz">www.epa.govt.nz</a>
<b>HSNO and ACVM controls</b>	<b>Emergency Plan:</b> 100L <b>Signage:</b> 100L

### Section 16: Other Information

<b>Additional information</b>	Bravecto is a registered trademark.
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Schering-Plough Animal Health Ltd known as MSD Animal Health, is a subsidiary of Merck & Co., Inc., Whitehouse Station, NJ, USA. Schering-Plough Animal Health Limited urges each user or recipient of this SDS to read the entire data sheet to become aware of the potential hazards associated with this material. This SDS summarises, at the date of issue, our best knowledge of the health and safety hazard information. Although reasonable care has been taken in the preparation of this document, Schering-Plough Animal Health Ltd extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

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## SECTION 1. IDENTIFICATION

Product name : Fluralaner / Diethyltoluamide Liquid Formulation

### Manufacturer or supplier's details

Company name of supplier : Merck & Co., Inc  
Address : 126 E. Lincoln Avenue  
Rahway, New Jersey U.S.A 07065  
Telephone : 908-740-4000  
Emergency telephone : 1-908-423-6000  
E-mail address : EHSDATASTEWARD@merck.com

### Recommended use of the chemical and restrictions on use

Recommended use : Veterinary product



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## SECTION 2. HAZARDS IDENTIFICATION

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

Flammable liquids : Category 2  
Reproductive toxicity : Category 1B

### GHS label elements

Hazard pictograms :  

Signal Word : Danger

Hazard Statements : H225 Highly flammable liquid and vapor.  
H360D May damage the unborn child.

Precautionary Statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, sparks, open flame and hot surfaces. - No smoking.  
P233 Keep container tightly closed.  
P241 Use explosion-proof electrical, ventilating and lighting equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P280 Wear protective gloves, protective clothing, eye protection and face protection.  
**Response:**  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

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P308 + P313 IF exposed or concerned: Get medical attention.

### Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.

### Disposal:

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

### Other hazards

Vapors may form explosive mixture with air.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
N,N-Dimethylacetamide	127-19-5	>= 30 - < 50
Fluralaner	864731-61-3	>= 20 - < 30
Poly(oxy-1,2-ethanediyl), $\alpha$ - [(tetrahydro-2-furanyl)methyl]- $\omega$ - hydroxy-	31692-85-0	>= 10 - < 20
N,N-Diethyl-m-toluamide	134-62-3	>= 10 - < 20
Acetone	67-64-1	>= 10 - < 20

Actual concentration is withheld as a trade secret

## 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.  
Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with soap and 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 : Flush eyes with water as a precaution.  
Get medical attention if irritation develops and persists.
- If swallowed : If swallowed, DO NOT induce vomiting.  
If vomiting occurs have person lean forward.  
Call a physician or poison control center immediately.  
Rinse mouth thoroughly with water.  
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and : May damage the unborn child.



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delayed  
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 and supportively.

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### SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during fire fighting : Do not use a solid water stream as it may scatter and spread fire.  
Flash back possible over considerable distance.  
Vapors may form explosive mixtures with air.  
Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Carbon oxides  
Chlorine compounds  
Fluorine compounds  
Nitrogen oxides (NO<sub>x</sub>)

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.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Remove all sources of ignition.  
Ventilate the area.  
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.  
Prevent spreading over a wide area (e.g., by containment or oil barriers).  
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 : Non-sparking tools should be used.  
Soak up with inert absorbent material.  
Suppress (knock down) gases/vapors/mists with a water spray jet.

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For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container.

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.

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### SECTION 7. HANDLING AND STORAGE

- |                             |   |   |
|-----------------------------|---|---|
| Technical measures          | : | See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.   |
| Local/Total ventilation     | : | If sufficient ventilation is unavailable, use with local exhaust ventilation.<br>Use explosion-proof electrical, ventilating and lighting equipment.  |
| Advice on safe handling     | : | Do not get on skin or clothing.<br>Do not breathe vapors or spray mist.<br>Do not swallow.<br>Avoid contact with eyes.<br>Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment<br>Non-sparking tools should be used.<br>Keep container tightly closed.<br>Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>Take precautionary measures against static discharges.<br>Take care to prevent spills, waste and minimize release to the environment. |
| Conditions for safe storage | : | Keep in properly labeled containers.<br>Store locked up.<br>Keep tightly closed.<br>Keep in a cool, well-ventilated place.<br>Store in accordance with the particular national regulations.<br>Keep away from heat and sources of ignition.   |
| Materials to avoid          | : | Do not store with the following product types:<br>Strong oxidizing agents<br>Organic peroxides<br>Flammable solids<br>Pyrophoric liquids<br>Pyrophoric solids<br>Self-heating substances and mixtures<br>Substances and mixtures which in contact with water emit flammable gases<br>Explosives<br>Gases  |

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
N,N-Dimethylacetamide	127-19-5	TWA	10 ppm	ACGIH
		TWA	10 ppm 35 mg/m <sup>3</sup>	NIOSH REL
		TWA	10 ppm 35 mg/m <sup>3</sup>	OSHA Z-1
Fluralaner	864731-61-3	TWA	100 µg/m <sup>3</sup> (OEB 2)	Internal
	Further information: Skin			
		Wipe limit	1000 µg/100 cm <sup>2</sup>	Internal
Acetone	67-64-1	TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
		TWA	250 ppm 590 mg/m <sup>3</sup>	NIOSH REL
		TWA	1,000 ppm 2,400 mg/m <sup>3</sup>	OSHA Z-1

#### Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
N,N-Dimethylacetamide	127-19-5	N-Methylacetamide	Urine	End of shift at end of work-week	30 mg/g Creatinine	ACGIH BEI
Acetone	67-64-1	Acetone	Urine	End of shift (As soon as possible after exposure ceases)	25 mg/l	ACGIH BEI

**Engineering measures** : Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip-less quick connections).  
 All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment.  
 Laboratory operations do not require special containment.  
 Use explosion-proof electrical, ventilating and lighting equipment.

#### Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to

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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 : Take note that the product is flammable, which may impact the selection of hand protection.

Eye protection : Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

Skin and body protection : Work uniform or laboratory coat.

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.  
The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Color	: yellow
Odor	: No data available
Odor Threshold	: No data available
pH	: No data available
Melting point/freezing point	: No data available
Initial boiling point and boiling range	: 217 °F / 103 °C
Flash point	: 45 °F / 7 °C

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Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	67 hPa (68 °F / 20 °C)
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	1.059 g/cm <sup>3</sup>
Solubility(ies)	:	
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Molecular weight	:	No data available
Particle size	:	Not applicable

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**SECTION 10. STABILITY AND REACTIVITY**

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

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products

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**SECTION 11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure**

Inhalation  
Skin contact  
Ingestion  
Eye contact

**Acute toxicity**

Not classified based on available information.

**Product:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: No mortality observed at this dose.

Acute inhalation toxicity : Acute toxicity estimate: 5.95 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Symptoms: Erythema

**Components:****N,N-Dimethylacetamide:**

Acute oral toxicity : LD50 (Rat): 4,800 mg/kg

Acute inhalation toxicity : LC50 (Rat): 2.2 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : Acute toxicity estimate: 1,100 mg/kg  
Method: Expert judgment  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

**Fluralaner:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: No mortality observed at this dose.  
No significant adverse effects were reported

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: No significant adverse effects were reported

**Poly(oxy-1,2-ethanediyl),  $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg  
Method: OECD Test Guideline 423  
Remarks: Based on data from similar materials

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**N,N-Diethyl-m-toluamide:**

Acute oral toxicity : LD50 (Rat): 1,950 mg/kg  
Acute inhalation toxicity : LC50 (Rat): 5.95 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Acute dermal toxicity : LD50 (Rat): 5,000 mg/kg

**Acetone:**

Acute oral toxicity : LD50 (Rat): 5,800 mg/kg  
Acute inhalation toxicity : LC50 (Rat): 76 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Acute dermal toxicity : LD50 (Rabbit): 7,426 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.

**Product:**

Species : Rabbit  
Result : No skin irritation

**Components:****N,N-Dimethylacetamide:**

Species : Rabbit  
Result : No skin irritation

**Fluralaner:**

Species : Rabbit  
Result : No skin irritation

**Poly(oxy-1,2-ethanediyl),  $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**

Species : reconstructed human epidermis (RhE)  
Method : OECD Test Guideline 439  
Remarks : Based on data from similar materials  
Result : No skin irritation

**N,N-Diethyl-m-toluamide:**

Species : Rabbit  
Result : No skin irritation

**Acetone:**

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Assessment : Repeated exposure may cause skin dryness or cracking.

### Serious eye damage/eye irritation

Not classified based on available information.

#### Product:

Species : Rabbit  
Result : Mild eye irritation

#### Components:

##### **N,N-Dimethylacetamide:**

Species : Rabbit  
Result : Irritation to eyes, reversing within 21 days

##### **Fluralaner:**

Species : Rabbit  
Result : Mild eye irritation

##### **Poly(oxy-1,2-ethanediyl), $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**

Species : Tissue Culture  
Method : OECD Test Guideline 492  
Remarks : Based on data from similar materials

Species : Bovine cornea  
Method : OECD Test Guideline 437  
Remarks : Based on data from similar materials

Result : Irritation to eyes, reversing within 21 days

##### **N,N-Diethyl-m-toluamide:**

Species : Rabbit  
Result : Irritation to eyes, reversing within 21 days  
Remarks : Based on harmonised classification in EU regulation 1272/2008, Annex VI

##### **Acetone:**

Species : Rabbit  
Result : Irritation to eyes, reversing within 21 days  
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.



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**Product:**

Test Type : Maximization Test  
Routes of exposure : Dermal  
Species : Guinea pig  
Result : Not a skin sensitizer.

**Components:****N,N-Dimethylacetamide:**

Routes of exposure : Skin contact  
Species : Guinea pig  
Result : negative

**Fluralaner:**

Test Type : Maximization Test  
Routes of exposure : Dermal  
Species : Guinea pig  
Result : Not a skin sensitizer.

**Poly(oxy-1,2-ethanediyl),  $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**

Test Type : KeratinoSens assay  
Method : OECD Test Guideline 442D  
Result : negative  
Remarks : Based on data from similar materials

Test Type : Direct Peptide Reactivity Assay (DPRA)  
Method : OECD Test Guideline 442C  
Result : positive  
Remarks : Based on data from similar materials

Test Type : Dendritic cell activation test  
Method : OECD Test Guideline 442E  
Result : negative  
Remarks : Based on data from similar materials

**Acetone:**

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

**Germ cell mutagenicity**

Not classified based on available information.

**Components:****N,N-Dimethylacetamide:**

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

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Genotoxicity in vivo : Test Type: Rodent dominant lethal test (germ cell) (in vivo)  
Species: Rat  
Application Route: Inhalation  
Method: OECD Test Guideline 478  
Result: negative

**Fluralaner:**

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

Test Type: Mouse Lymphoma  
Result: negative

Test Type: Chromosomal aberration  
Result: negative

Genotoxicity in vivo : Test Type: Micronucleus test  
Species: Mouse  
Cell type: Bone marrow  
Application Route: Oral  
Result: negative

**Poly(oxy-1,2-ethanediyl),  $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative  
Remarks: Based on data from similar materials

**N,N-Diethyl-m-toluamide:**

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

**Acetone:**

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

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

Test Type: Chromosome aberration test in vitro  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Application Route: Ingestion  
Result: negative

**Carcinogenicity**

Not classified based on available information.

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### Components:

#### **N,N-Dimethylacetamide:**

Species : Rat  
 Application Route : inhalation (vapor)  
 Exposure time : 18 month(s)  
 Result : negative

#### **Fluralaner:**

Carcinogenicity - Assessment : No data available

#### **N,N-Diethyl-m-toluamide:**

Species : Rat  
 Application Route : Ingestion  
 Exposure time : 104 weeks  
 Result : negative

#### **Acetone:**

Species : Mouse  
 Application Route : Skin contact  
 Exposure time : 424 days  
 Result : negative

**IARC**      Group 2B: Possibly carcinogenic to humans  
 N,N-Dimethylacetamide      127-19-5

**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:

#### **N,N-Dimethylacetamide:**

Effects on fertility : Test Type: One-generation reproduction toxicity study  
 Species: Rat  
 Application Route: Inhalation  
 Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
 Species: Rat  
 Application Route: Inhalation  
 Result: positive

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

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### Fluralaner:

Effects on fertility : Test Type: Two-generation study  
 Species: Rat  
 Application Route: Oral  
 General Toxicity Parent: NOAEL: 50 mg/kg body weight  
 General Toxicity F1: LOAEL: 100 mg/kg body weight  
 Result: No effects on fertility., Postimplantation loss., Adverse neonatal effects.

Test Type: One-generation reproduction toxicity study  
 Species: Dog  
 Application Route: Oral  
 Fertility: NOAEL: 75 mg/kg body weight  
 Result: No effects on fertility and early embryonic development were detected.  
 Remarks: No significant adverse effects were reported

Effects on fetal development : Test Type: Development  
 Species: Rat  
 Application Route: Oral  
 Developmental Toxicity: NOAEL: 100 mg/kg body weight  
 Result: Embryotoxic effects and adverse effects on the offspring were detected only at high maternally toxic doses, No teratogenic effects.

Test Type: Development  
 Species: Rabbit  
 Application Route: Oral  
 Developmental Toxicity: NOAEL: 10 mg/kg body weight  
 Result: Skeletal malformations., Visceral malformations.  
 Remarks: Maternal toxicity observed.

Test Type: Development  
 Species: Rabbit  
 Application Route: Dermal  
 Developmental Toxicity: NOAEL: 100 mg/kg body weight  
 Result: Skeletal malformations.

Reproductive toxicity - Assessment : Suspected of damaging the unborn child.

### N,N-Diethyl-m-toluamide:

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

### Acetone:

Effects on fertility : Test Type: One-generation reproduction toxicity study  
 Species: Rat  
 Application Route: Ingestion

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Result: negative

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

### STOT-single exposure

Not classified based on available information.

### Components:

#### Acetone:

Assessment : May cause drowsiness or dizziness.

### STOT-repeated exposure

Not classified based on available information.

### Repeated dose toxicity

### Components:

#### N,N-Dimethylacetamide:

Species : Rat  
 NOAEL : 90 mg/m<sup>3</sup>  
 LOAEL : 360 mg/m<sup>3</sup>  
 Application Route : inhalation (vapor)  
 Exposure time : 24 Months

#### Fluralaner:

Species : Dog  
 NOAEL : 1 mg/kg  
 Application Route : Oral  
 Exposure time : 52 Weeks  
 Target Organs : Liver  
 Remarks : No significant adverse effects were reported

Species : Juvenile dog  
 LOAEL : 56 - 280 mg/kg  
 Application Route : Oral  
 Exposure time : 24 Weeks  
 Symptoms : Diarrhea

Species : Rat  
 LOAEL : 400 mg/kg  
 Application Route : Oral  
 Exposure time : 90 Days  
 Target Organs : Liver, thymus gland

Species : Rat  
 NOAEL : 500 mg/kg  
 Application Route : Dermal  
 Exposure time : 90 Days

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Target Organs : Liver  
Remarks : No significant adverse effects were reported

**Acetone:**

Species : Rat  
NOAEL : 900 mg/kg  
LOAEL : 1,700 mg/kg  
Application Route : Ingestion  
Exposure time : 90 Days

Species : Rat  
NOAEL : 45 mg/l  
Application Route : inhalation (vapor)  
Exposure time : 8 Weeks

**Aspiration toxicity**

Not classified based on available information.

**Components:****Fluralaner:**

Not applicable

**Acetone:**

The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.

**Experience with human exposure****Product:**

Skin contact : Remarks: May irritate skin.  
Eye contact : Remarks: May cause eye irritation.

**Components:****Fluralaner:**

Skin contact : Remarks: May irritate skin.  
Eye contact : Remarks: May cause eye irritation.

---

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:****N,N-Dimethylacetamide:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 500 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 500 mg/l  
Exposure time: 48 h  
Method: Directive 67/548/EEC, Annex V, C.2.

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Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l  
Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): > 500 mg/l  
Exposure time: 72 h

Toxicity to microorganisms : EC10: > 1,995 mg/l  
Exposure time: 30 min

### Fluralaner:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.0488 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.015 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: No toxicity at the limit of solubility.

Toxicity to algae/aquatic plants : NOEC (Pseudokirchneriella subcapitata (green algae)): >= 0.08 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: No toxicity at the limit of solubility.

Toxicity to fish (Chronic toxicity) : NOEC (Zebrafish): >= 0.049 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 204  
Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.0736 µg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

### Poly(oxy-1,2-ethanediyl), α-[(tetrahydro-2-furanyl)methyl]-ω-hydroxy-:

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

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Remarks: Based on data from similar materials

### **N,N-Diethyl-m-toluamide:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 97 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 75 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 41 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

NOEC (Selenastrum capricornutum (green algae)): 7.6 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)): 3.7 mg/l  
Exposure time: 21 d

### **Acetone:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 5,540 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia pulex (Water flea)): 8,800 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : NOEC (Pseudokirchneriella subcapitata (green algae)): 7,000 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): >= 79 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 61,150 mg/l  
Exposure time: 30 min  
Method: ISO 8192

### **Persistence and degradability**

#### **Components:**

#### **N,N-Dimethylacetamide:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 70 %  
Exposure time: 28 d  
Remarks: The 10 day time window criterion is not fulfilled.

#### **Poly(oxy-1,2-ethanediyl), $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**



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Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301F  
Remarks: Based on data from similar materials

**N,N-Diethyl-m-toluamide:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 83.8 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B

**Acetone:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 91 %  
Exposure time: 28 d

**Bioaccumulative potential****Components:****Fluralaner:**

Bioaccumulation : Species: Zebrafish  
Bioconcentration factor (BCF): 79.4  
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water : log Pow: 4.5

**Poly(oxy-1,2-ethanediyl),  $\alpha$ -[(tetrahydro-2-furanyl)methyl]- $\omega$ -hydroxy-:**

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

**N,N-Diethyl-m-toluamide:**

Partition coefficient: n-octanol/water : log Pow: 2.02

**Acetone:**

Partition coefficient: n-octanol/water : log Pow: -0.27 - -0.23

**Mobility in soil****Components:****Fluralaner:**

Distribution among environmental compartments : log Koc: 3.4

**Other adverse effects****Components:****Fluralaner:**

Results of PBT and vPvB : This substance is not considered to be persistent, bioaccumu-



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Proper shipping name : Acetone SOLUTION  
 Class : 3  
 Packing group : II  
 Labels : FLAMMABLE LIQUID  
 ERG Code : 127  
 Marine pollutant : yes(Fluralaner)

### 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)
Acetone	67-64-1	5000	46728

### 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** : Flammable (gases, aerosols, liquids, or solids)  
 Reproductive toxicity

**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

N,N-Dimethylacetamide	127-19-5
Fluralaner	864731-61-3
Poly(oxy-1,2-ethanediyl), α-[(tetrahydro-2-furanyl)methyl]-ω-hydroxy-	31692-85-0
N,N-Diethyl-m-toluamide	134-62-3
Acetone	67-64-1

#### California Prop. 65

WARNING: This product can expose you to chemicals including N,N-Dimethylacetamide, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

#### California List of Hazardous Substances

N,N-Dimethylacetamide	127-19-5
Acetone	67-64-1

#### California Permissible Exposure Limits for Chemical Contaminants

N,N-Dimethylacetamide	127-19-5
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Acetone

67-64-1

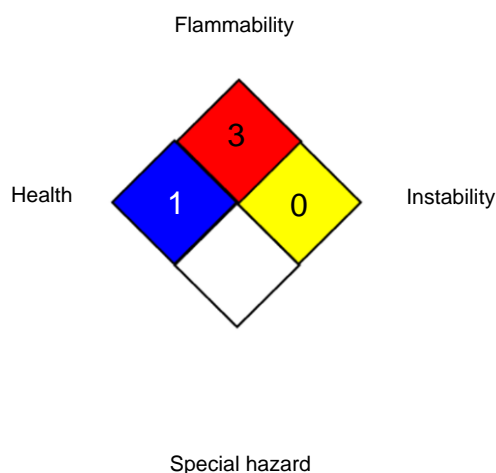
**The ingredients of this product are reported in the following inventories:**

AICS : not determined  
 DSL : not determined  
 IECSC : not determined

### SECTION 16. OTHER INFORMATION

#### Further information

##### NFPA 704:



##### HMIS® IV:

<b>HEALTH</b>	*	<b>2</b>
<b>FLAMMABILITY</b>	<b>3</b>	
<b>PHYSICAL HAZARD</b>	<b>0</b>	

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  
 ACGIH / TWA : 8-hour, time-weighted average  
 ACGIH / STEL : Short-term exposure limit  
 NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek  
 OSHA Z-1 / 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 Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule;

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ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; 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 : 10/26/2021

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 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