

# SAFETY DATA SHEET

2D-LC Easy Starter Kit, Part Number G4236-68000

## Section 1. Identification

**Product identifier** : 2D-LC Easy Starter Kit, Part Number G4236-68000  
**Part no. (chemical kit)** : G4236-68000  
**Part no.** : Formic Acid G2453-85060  
 2D-LC Solution 5190-6895

### Relevant identified uses of the substance or mixture and uses advised against

**Identified uses** : Analytical reagent.  
 Formic Acid 5 mL  
 2D-LC Solution 1 x 2 mL

**Supplier/Manufacturer** : Agilent Technologies, Inc.  
 5301 Stevens Creek Blvd  
 Santa Clara, CA 95051, USA  
 800-227-9770

**Emergency telephone number (with hours of operation)** : CHEMTREC®: 1-800-424-9300

## Section 2. Hazard identification

### Classification of the substance or mixture

#### **Formic Acid**

H226 FLAMMABLE LIQUIDS - Category 3  
 H302 ACUTE TOXICITY (oral) - Category 4  
 H331 ACUTE TOXICITY (inhalation) - Category 3  
 H314 SKIN CORROSION - Category 1A  
 H318 SERIOUS EYE DAMAGE - Category 1  
 Health Hazards Not Otherwise Classified - Category 1

#### **2D-LC Solution**

H225 FLAMMABLE LIQUIDS - Category 2  
 H302 ACUTE TOXICITY (oral) - Category 4  
 H312 ACUTE TOXICITY (dermal) - Category 4  
 H332 ACUTE TOXICITY (inhalation) - Category 4  
 H319 EYE IRRITATION - Category 2A  
 H317 SKIN SENSITIZATION - Category 1  
 H351 CARCINOGENICITY - Category 2  
 H360 TOXIC TO REPRODUCTION - Category 1  
 H336 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3  
 H400 AQUATIC HAZARD (ACUTE) - Category 1  
 H410 AQUATIC HAZARD (LONG-TERM) - Category 1

### GHS label elements

## Section 2. Hazard identification

**Hazard pictograms** : Formic Acid



2D-LC Solution



**Signal word** : Formic Acid  
2D-LC Solution

Danger  
Danger

**Hazard statements** : Formic Acid

H226 - Flammable liquid and vapor.  
H302 - Harmful if swallowed.  
H314 - Causes severe skin burns and eye damage.  
H331 - Toxic if inhaled.  
Causes severe respiratory tract burns.  
Causes severe digestive tract burns.  
2D-LC Solution  
H225 - Highly flammable liquid and vapor.  
H302 + H312 + H332 - Harmful if swallowed, in contact with skin or if inhaled.  
H317 - May cause an allergic skin reaction.  
H319 - Causes serious eye irritation.  
H336 - May cause drowsiness or dizziness.  
H351 - Suspected of causing cancer.  
H360 - May damage fertility or the unborn child.  
H410 - Very toxic to aquatic life with long lasting effects.

### Precautionary statements

**Prevention** : Formic Acid

P280 - Wear protective gloves, protective clothing and eye or face protection.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P261 - Avoid breathing vapor.  
P270 - Do not eat, drink or smoke when using this product.  
2D-LC Solution  
P264 - Wash thoroughly after handling.  
P201 - Obtain special instructions before use.  
P280 - Wear protective gloves, protective clothing and eye or face protection.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P273 - Avoid release to the environment.  
P261 - Avoid breathing vapor.  
P270 - Do not eat, drink or smoke when using this product.  
P264 - Wash thoroughly after handling.

**Response** : Formic Acid

P304 + P340, P310 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor.  
P301 + P310, P330, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353, P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor.  
P363 - Wash contaminated clothing before reuse.  
P305 + P351 + P338, P310 - IF IN EYES: Rinse

## Section 2. Hazard identification

	2D-LC Solution	cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor. P391 - Collect spillage. P308 + P313 - IF exposed or concerned: Get medical advice or attention. P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell. P362 + P364 - Take off contaminated clothing and wash it before reuse. P302 + P312, P352 - IF ON SKIN: Call a POISON CENTER or doctor if you feel unwell. Wash with plenty of water. P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical advice or attention.
<b>Storage</b>	: Formic Acid 2D-LC Solution	Not applicable. P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
<b>Disposal</b>	: Formic Acid  2D-LC Solution	P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
<b>Supplemental label elements</b>	: Formic Acid  2D-LC Solution	Keep container tightly closed. Do not breathe vapor or spray. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. None known.
<b>Other hazards which do not result in classification</b>	: Formic Acid 2D-LC Solution	None known. None known.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Formic Acid  
2D-LC Solution      Substance  
Mixture

Ingredient name	Synonyms	% (w/w)	CAS number
<b>Formic Acid</b>			
Formic acid	Formic Acid	100	64-18-6
<b>2D-LC Solution</b>			
Acetonitrile	Acetonitrile	≥60 - ≤80	75-05-8
Acetone	Acetone	≥10 - ≤30	67-64-1
Atrazine (ISO)	Atrazine	≥0.1 - ≤1	1912-24-9
1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)-(1-methylethyl)-	1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)-(1-methylethyl)-	≥0.1 - ≤1	6190-65-4
Chlorotoluron (ISO)	Chlorotoluron	≥0.1 - ≤1	15545-48-9

## Section 3. Composition/information on ingredients

Diuron (ISO)	Diuron	≥0.1 - ≤1	330-54-1
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	Hexazinone	≥0.1 - ≤1	51235-04-2
Linuron (ISO)	Linuron (ISO)	≥0.1 - ≤1	330-55-2
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	Metazachlor	≥0.1 - ≤1	67129-08-2
Methabenzthiazuron (ISO)	Methabenzthiazuron	≥0.1 - ≤1	18691-97-9
Metoxuron (ISO)	Metoxuron (ISO)	≥0.1 - ≤1	19937-59-8
prometryn	Prometryn	≥0.1 - ≤1	7287-19-6
Terbutylazine	Terbutylazine	≥0.1 - ≤1	5915-41-3
desethylterbutylazine	desethylterbutylazine	≥0.1 - ≤1	30125-63-4

Ranges if listed above for hazardous ingredient(s) are prescribed ranges. The actual concentration(s) or actual concentration range(s) are being withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First-aid measures

### Description of necessary first aid measures

#### Eye contact

: Formic Acid

Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

2D-LC Solution

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

#### Inhalation

: Formic Acid

Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

2D-LC Solution

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing



## Section 4. First-aid measures

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<b>Eye contact</b>	: Formic Acid 2D-LC Solution	Causes serious eye damage. Causes serious eye irritation.
<b>Inhalation</b>	: Formic Acid  2D-LC Solution	Toxic if inhaled. Severely corrosive to the respiratory system. Harmful if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.
<b>Skin contact</b>	: Formic Acid 2D-LC Solution	Causes severe burns. Harmful in contact with skin. May cause an allergic skin reaction.
<b>Ingestion</b>	: Formic Acid  2D-LC Solution	Severely corrosive to the digestive tract. Causes severe burns. May cause burns to mouth, throat and stomach. Harmful if swallowed. Harmful if swallowed. Can cause central nervous system (CNS) depression.

#### Over-exposure signs/symptoms

<b>Eye contact</b>	: Formic Acid  2D-LC Solution	Adverse symptoms may include the following: pain watering redness Adverse symptoms may include the following: pain or irritation watering redness
<b>Inhalation</b>	: Formic Acid  2D-LC Solution	Adverse symptoms may include the following: respiratory tract irritation coughing Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness reduced fetal weight increase in fetal deaths skeletal malformations
<b>Skin contact</b>	: Formic Acid  2D-LC Solution	Adverse symptoms may include the following: pain or irritation redness blistering may occur Adverse symptoms may include the following: irritation redness reduced fetal weight increase in fetal deaths skeletal malformations
<b>Ingestion</b>	: Formic Acid  2D-LC Solution	Adverse symptoms may include the following: stomach pains Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

### Indication of immediate medical attention and special treatment needed, if necessary

## Section 4. First-aid measures

<b>Notes to physician</b>	: Formic Acid  2D-LC Solution	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Specific treatments</b>	: Formic Acid 2D-LC Solution	No specific treatment. No specific treatment.
<b>Protection of first-aiders</b>	: Formic Acid   2D-LC Solution	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

<b>Suitable extinguishing media</b>	: Formic Acid 2D-LC Solution	Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam. Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
<b>Unsuitable extinguishing media</b>	: Formic Acid 2D-LC Solution	Do not use water jet. Do not use water jet.

**Specific hazards arising from the chemical** :  Formic Acid

2D-LC Solution

Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.  
Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.



## Section 5. Fire-fighting measures

### Hazardous thermal decomposition products

: Formic Acid

Decomposition products may include the following materials:

carbon dioxide  
carbon monoxide

2D-LC Solution

Decomposition products may include the following materials:

carbon dioxide  
carbon monoxide  
nitrogen oxides  
cyanides

### Special protective actions for fire-fighters

: Formic Acid

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

2D-LC Solution

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

### Special protective equipment for fire-fighters

: Formic Acid

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

2D-LC Solution

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

: Formic Acid

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

2D-LC Solution

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## Section 6. Accidental release measures

**For emergency responders** : Formic Acid

2D-LC Solution

If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".  
If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

**Environmental precautions** : Formic Acid

2D-LC Solution

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

### Methods and materials for containment and cleaning up

**Methods for cleaning up** : Formic Acid

2D-LC Solution

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

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## Section 7. Handling and storage

### Precautions for safe handling

**Protective measures** :  Formic Acid

2D-LC Solution

Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.  
Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin

## Section 7. Handling and storage

		<p>sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.</p>
<p><b>Advice on general occupational hygiene</b></p>	<p>: Formic Acid</p> <p>2D-LC Solution</p>	<p>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</p> <p>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</p>
<p><b>Conditions for safe storage, including any incompatibilities</b></p>	<p>: Formic Acid</p> <p>2D-LC Solution</p>	<p>Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.</p> <p>Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in</p>

## Section 7. Handling and storage

unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

## Section 8. Exposure controls/personal protection

### [Control parameters](#)

### [Occupational exposure limits](#)

Ingredient name	Exposure limits
<p><b>Formic Acid</b> Formic acid</p>	<p><b>CA Alberta Provincial (Canada, 6/2018).</b> OEL: 9.4 mg/m<sup>3</sup> 8 hours. OEL: 10 ppm 15 minutes. OEL: 5 ppm 8 hours. OEL: 19 mg/m<sup>3</sup> 15 minutes.</p> <p><b>CA British Columbia Provincial (Canada, 6/2023).</b> TWA: 5 ppm 8 hours. STEL: 10 ppm 15 minutes.</p> <p><b>CA Ontario Provincial (Canada, 6/2019).</b> TWA: 5 ppm 8 hours. STEL: 10 ppm 15 minutes.</p> <p><b>CA Quebec Provincial (Canada, 6/2022).</b> TWAEV: 5 ppm 8 hours. TWAEV: 9.4 mg/m<sup>3</sup> 8 hours. STEV: 10 ppm 15 minutes. STEV: 19 mg/m<sup>3</sup> 15 minutes.</p> <p><b>CA Saskatchewan Provincial (Canada, 7/2013).</b> STEL: 10 ppm 15 minutes. TWA: 5 ppm 8 hours.</p>
<p><b>2D-LC Solution</b> Acetonitrile</p>	<p><b>CA Alberta Provincial (Canada, 6/2018).</b> OEL: 34 mg/m<sup>3</sup> 8 hours. OEL: 20 ppm 8 hours.</p> <p><b>CA British Columbia Provincial (Canada, 6/2023). Absorbed through skin.</b> TWA: 20 ppm 8 hours.</p> <p><b>CA Ontario Provincial (Canada, 6/2019). Absorbed through skin.</b> TWA: 20 ppm 8 hours.</p> <p><b>CA Quebec Provincial (Canada, 6/2022). Absorbed through skin.</b> TWAEV: 20 ppm 8 hours.</p> <p><b>CA Saskatchewan Provincial (Canada, 7/2013). Absorbed through skin.</b> STEL: 30 ppm 15 minutes. TWA: 20 ppm 8 hours.</p>
<p>Acetone</p>	<p><b>CA Alberta Provincial (Canada, 6/2018).</b> OEL: 1200 mg/m<sup>3</sup> 8 hours. OEL: 1800 mg/m<sup>3</sup> 15 minutes. OEL: 500 ppm 8 hours. OEL: 750 ppm 15 minutes.</p> <p><b>CA British Columbia Provincial (Canada, 6/2023).</b></p>

## Section 8. Exposure controls/personal protection

Atrazine (ISO)	<p>TWA: 250 ppm 8 hours.          STEL: 500 ppm 15 minutes.  <b>CA Ontario Provincial (Canada, 6/2019).</b>          TWA: 250 ppm 8 hours.          STEL: 500 ppm 15 minutes.  <b>CA Quebec Provincial (Canada, 6/2022).</b>          TWAEV: 250 ppm 8 hours.          STEV: 500 ppm 15 minutes.  <b>CA Saskatchewan Provincial (Canada, 7/2013).</b>          STEL: 750 ppm 15 minutes.          TWA: 500 ppm 8 hours.</p>
Diuron (ISO)	<p><b>CA Ontario Provincial (Canada, 6/2019).</b>          TWA: 2 mg/m<sup>3</sup> 8 hours. Form: Inhalable particulate matter.  <b>CA Alberta Provincial (Canada, 6/2018).</b>          OEL: 5 mg/m<sup>3</sup> 8 hours.  <b>CA British Columbia Provincial (Canada, 6/2023).</b>          TWA: 5 mg/m<sup>3</sup> 8 hours.  <b>CA Quebec Provincial (Canada, 6/2022).</b>          TWAEV: 5 mg/m<sup>3</sup> 8 hours.  <b>CA Saskatchewan Provincial (Canada, 7/2013).</b>          STEL: 10 mg/m<sup>3</sup> 15 minutes.          TWA: 5 mg/m<sup>3</sup> 8 hours.</p>
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione  prometryn	<p><b>CA Alberta Provincial (Canada, 6/2018).</b>          OEL: 10 mg/m<sup>3</sup> 8 hours.  <b>CA British Columbia Provincial (Canada, 6/2023).</b>          TWA: 10 mg/m<sup>3</sup> 8 hours.  <b>CA Ontario Provincial (Canada, 6/2019).</b>          TWA: 10 mg/m<sup>3</sup> 8 hours.  <b>CA Quebec Provincial (Canada, 6/2022).</b>          TWAEV: 10 mg/m<sup>3</sup> 8 hours.  <b>CA Saskatchewan Provincial (Canada, 7/2013).</b>          STEL: 20 mg/m<sup>3</sup> 15 minutes.          TWA: 10 mg/m<sup>3</sup> 8 hours.  <b>ACGIH TLV (United States, 1/2023).</b>          TWA: 3 mg/m<sup>3</sup> 8 hours. Form: Inhalable fraction  <b>ACGIH TLV (United States, 1/2023).</b>          TWA: 1 mg/m<sup>3</sup> 8 hours. Form: Inhalable fraction</p>

### Biological exposure indices

No exposure indices known.

### Appropriate engineering controls

- Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

### Environmental exposure controls

- Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## Section 8. Exposure controls/personal protection

### Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### Appearance

<b>Physical state</b>	: Formic Acid 2D-LC Solution	Liquid. [Clear.] Liquid.
<b>Color</b>	: Formic Acid 2D-LC Solution	Colorless. Not available.
<b>Odor</b>	: Formic Acid 2D-LC Solution	Pungent. Not available.
<b>Odor threshold</b>	: Formic Acid 2D-LC Solution	Not available. Not available.
<b>pH</b>	: Formic Acid 2D-LC Solution	Not available. Not available.
<b>Melting point/freezing point</b>	: Formic Acid 2D-LC Solution	4°C (39.2°F) [OECD 102] Not available.
<b>Boiling point, initial boiling point, and boiling range</b>	: Formic Acid 2D-LC Solution	100.23°C (212.4°F) [OECD 103] Not available.
<b>Flash point</b>	: Formic Acid 2D-LC Solution	Closed cup: 49.5°C (121.1°F) [DIN EN ISO 13736] Closed cup: -18 to 23°C (-0.4 to 73.4°F)

## Section 9. Physical and chemical properties and safety characteristics

<b>Evaporation rate</b>	: Formic Acid	1.14 (butyl acetate = 1)
	2D-LC Solution	Not available.
<b>Flammability</b>	: Formic Acid	Not applicable.
	2D-LC Solution	Not applicable.
<b>Lower and upper explosion limit/flammability limit</b>	: Formic Acid	Lower: 18%
	2D-LC Solution	Upper: 51%
		Not available.
<b>Vapor pressure</b>	: Formic Acid	4.3 kPa (32.03522 mm Hg) [room temperature] [EU A.4]
		17.4 kPa (130.51 mm Hg) [50°C (122°F)]

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
<b>2D-LC Solution</b>						
acetone	180.01463	24	-	-	-	-
acetonitrile	70.88853	9.5	-	-	-	-

<b>Relative vapor density</b>	: Formic Acid	1.6 [Air = 1]
	2D-LC Solution	Not available.
<b>Relative density</b>	: Formic Acid	1.2
	2D-LC Solution	Not available.

<b>Solubility(ies)</b>	: <b>Media</b>	<b>Result</b>
	<b>Formic Acid</b>	
	methanol	Soluble
	diethyl ether	Soluble
	acetone	Soluble
	water	Soluble
	<b>2D-LC Solution</b>	
	water	Soluble

<b>Partition coefficient: n-octanol/water</b>	: Formic Acid	-2.3 [OECD 107]
	2D-LC Solution	Not applicable.
<b>Auto-ignition temperature</b>	: Formic Acid	434°C (813.2°F)

Ingredient name	°C	°F	Method
<b>2D-LC Solution</b>			
acetone	465	869	-
acetonitrile	524	975.2	-

<b>Decomposition temperature</b>	: Formic Acid	150 to 300°C (302 to 572°F)
	2D-LC Solution	Not available.

<b>Viscosity</b>	: Formic Acid	Dynamic (room temperature): 1.22 mPa·s (1.22 cP) [OECD 114]
		Kinematic (room temperature): 1.47 mm <sup>2</sup> /s (1.47 cSt) [OECD 114]
		Kinematic (40°C (104°F)): 1.02 mm <sup>2</sup> /s (1.02 cSt) [OECD 114]
	2D-LC Solution	Not available.

### Particle characteristics

<b>Median particle size</b>	: Formic Acid	Not applicable.
	2D-LC Solution	Not applicable.

## Section 10. Stability and reactivity

<b>Reactivity</b>	: Formic Acid 2D-LC Solution	No specific test data related to reactivity available for this product or its ingredients. No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: Formic Acid 2D-LC Solution	The product is stable. The product is stable.
<b>Possibility of hazardous reactions</b>	: Formic Acid 2D-LC Solution	Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	: Formic Acid 2D-LC Solution	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas. Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
<b>Incompatible materials</b>	: Formic Acid 2D-LC Solution	Reactive or incompatible with the following materials: oxidizing materials Reactive or incompatible with the following materials: oxidizing materials
<b>Hazardous decomposition products</b>	: Formic Acid 2D-LC Solution	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>Formic Acid</b> Formic acid	LC50 Inhalation Vapor	Rat	7400 mg/m <sup>3</sup>	4 hours
	LD50 Oral	Rat	730 mg/kg	-
<b>2D-LC Solution</b> Acetonitrile	LC50 Inhalation Vapor	Rat	17100 ppm	4 hours
	LD50 Oral	Rat	2460 mg/kg	-
Acetone	LD50 Oral	Rat	5800 mg/kg	-
Atrazine (ISO)	LC50 Inhalation Dusts and mists	Rat	5200 mg/m <sup>3</sup>	4 hours
	LD50 Dermal	Rabbit	7500 mg/kg	-
Chlorotoluron (ISO)	LD50 Dermal	Rat	3 g/kg	-
	LD50 Oral	Rat	672 mg/kg	-
Diuron (ISO)	LD50 Oral	Rat	5800 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat - Male, Female	>5.05 mg/l	4 hours
	LD50 Dermal	Rat	>5 g/kg	-
	LD50 Oral	Rat	1 g/kg	-



## Section 11. Toxicological information

3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	LD50 Dermal	Rabbit	>5278 mg/kg	-
Linuron (ISO)	LD50 Dermal	Rat	5278 mg/kg	-
	LD50 Oral	Rat	1690 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	48 mg/m <sup>3</sup>	4 hours
	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	1146 mg/kg	-
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	LD50 Dermal	Rat	>6810 mg/kg	-
Metoxuron (ISO) prometryn Terbuthylazine	LD50 Oral	Rat	1 g/kg	-
	LD50 Oral	Rat	1600 mg/kg	-
	LD50 Oral	Rat	1802 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	>5.3 mg/l	4 hours
	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	1845 mg/kg	-

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>Formic Acid</b> Formic acid	Eyes - Severe irritant	Rabbit	-	122 mg	-
<b>2D-LC Solution</b> Acetonitrile	Eyes - Moderate irritant	Rabbit	-	24 hours 100 uL	-
Acetone	Eyes - Mild irritant	Rabbit	-	10 uL	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-
	Skin - Mild irritant	Rabbit	-	395 mg	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 mg	-
Atrazine (ISO)	Eyes - Severe irritant	Rabbit	-	6320 ug	-
	Skin - Mild irritant	Rabbit	-	38 mg	-
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione prometryn	Eyes - Moderate irritant	Rabbit	-	48 mg	-
	Eyes - Mild irritant	Rabbit	-	80 mg	-

### Sensitization

Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Classification

## Section 11. Toxicological information

Product/ingredient name	IARC	NTP	ACGIH
<b>2D-LC Solution</b>			
Acetonitrile	-	-	A4
Acetone	-	-	A4
Atrazine (ISO)	3	-	A3
Diuron (ISO)	-	-	A4
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	-	-	A4
prometryn	-	-	A4

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<b>2D-LC Solution</b> Acetone	Category 3	-	Narcotic effects

### Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
<b>2D-LC Solution</b> Atrazine (ISO) Diuron (ISO) Linuron (ISO) Terbutylazine	Category 2 Category 2 Category 2 Category 2	oral inhalation - -	heart blood system blood system -

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Formic Acid  
2D-LC Solution

Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.  
Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

### Potential acute health effects

**Eye contact** : Formic Acid  
2D-LC Solution

Causes serious eye damage.  
Causes serious eye irritation.

**Inhalation** : Formic Acid  
2D-LC Solution

Toxic if inhaled. Severely corrosive to the respiratory system.  
Harmful if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

**Skin contact** : Formic Acid  
2D-LC Solution

Causes severe burns.  
Harmful in contact with skin. May cause an allergic skin reaction.

**Ingestion** : Formic Acid  
2D-LC Solution

Severely corrosive to the digestive tract. Causes severe burns. May cause burns to mouth, throat and stomach. Harmful if swallowed.  
Harmful if swallowed. Can cause central nervous system (CNS) depression.

### Symptoms related to the physical, chemical and toxicological characteristics

## Section 11. Toxicological information

<b>Eye contact</b>	: Formic Acid	Adverse symptoms may include the following: pain watering redness
	2D-LC Solution	Adverse symptoms may include the following: pain or irritation watering redness
<b>Inhalation</b>	: Formic Acid	Adverse symptoms may include the following: respiratory tract irritation coughing
	2D-LC Solution	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness reduced fetal weight increase in fetal deaths skeletal malformations
<b>Skin contact</b>	: Formic Acid	Adverse symptoms may include the following: pain or irritation redness blistering may occur
	2D-LC Solution	Adverse symptoms may include the following: irritation redness reduced fetal weight increase in fetal deaths skeletal malformations
<b>Ingestion</b>	: Formic Acid	Adverse symptoms may include the following: stomach pains
	2D-LC Solution	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

- Potential immediate effects** : Not available.  
**Potential delayed effects** : Not available.

#### Long term exposure

- Potential immediate effects** : Not available.  
**Potential delayed effects** : Not available.

#### Potential chronic health effects

- General** : Formic Acid  
2D-LC Solution  
No known significant effects or critical hazards. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : Formic Acid  
2D-LC Solution  
No known significant effects or critical hazards. Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : Formic Acid  
2D-LC Solution  
No known significant effects or critical hazards.  
No known significant effects or critical hazards.

## Section 11. Toxicological information

**Reproductive toxicity** : Formic Acid  
2D-LC Solution No known significant effects or critical hazards.  
May damage fertility or the unborn child.

### Numerical measures of toxicity

#### Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
<b>Formic Acid</b> Formic acid	730	N/A	N/A	7.4	N/A
<b>2D-LC Solution</b> 2D-LC Solution	680.0	1496.0	N/A	15.0	N/A
Acetonitrile	500	1100	N/A	11	N/A
Acetone	5800	20000	N/A	76	N/A
Atrazine (ISO)	672	3000	N/A	N/A	5.2
1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)-(1-methylethyl)-	500	N/A	N/A	11	N/A
Chlorotoluron (ISO)	5800	N/A	N/A	N/A	N/A
Diuron (ISO)	1000	N/A	N/A	N/A	N/A
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	1690	5278	N/A	N/A	N/A
Linuron (ISO)	1146	N/A	N/A	N/A	0.048
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	1000	N/A	N/A	N/A	N/A
Metoxuron (ISO)	1600	N/A	N/A	N/A	N/A
prometryn	1802	N/A	N/A	N/A	N/A
Terbutylazine	1845	2500	N/A	N/A	N/A

**Other information** : 2D-LC Solution Adverse symptoms may include the following: May cause skin sensitization.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
<b>Formic Acid</b> Formic acid	Acute EC50 151200 µg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Larvae	48 hours
	Acute LC50 80000 to 90000 µg/l Marine water	Crustaceans - <i>Carcinus maenas</i> - Adult	48 hours
	Acute NOEC ≥100 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
<b>2D-LC Solution</b> Acetonitrile	Acute IC50 3685000 µg/l Fresh water	Aquatic plants - <i>Lemna minor</i>	96 hours
	Acute LC50 3600000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Chronic NOEC 1000000 µg/l Fresh water	Aquatic plants - <i>Lemna minor</i>	96 hours
	Chronic NOEC 160000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
Acetone	Acute EC50 7200000 µg/l Fresh water	Algae - <i>Selenastrum sp.</i>	96 hours
	Acute LC50 4.42589 ml/L Marine water	Crustaceans - <i>Acartia tonsa</i> - Copepodid	48 hours
	Acute LC50 7460000 µg/l Fresh water	Daphnia - <i>Daphnia cucullata</i>	48 hours

## Section 12. Ecological information

Atrazine (ISO)	Acute LC50 5600 ppm Fresh water	Fish - <i>Poecilia reticulata</i>	96 hours
	Chronic NOEC 4.95 mg/l Marine water	Algae - <i>Ulva pertusa</i>	96 hours
	Chronic NOEC 0.016 ml/L Fresh water	Crustaceans - <i>Daphniidae</i>	21 days
1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)- (1-methylethyl)- Chlorotoluron (ISO)	Chronic NOEC 0.1 ml/L Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	21 days
	Acute EC50 4.3 µg/l Fresh water	Algae - <i>Chlorella vulgaris</i>	96 hours
	Acute EC50 11 µg/l Fresh water	Algae - <i>Scenedesmus acutus</i>	72 hours
	Acute EC50 0.0405 mg/l Fresh water	Aquatic plants - <i>Lemna minor</i>	96 hours
	Acute EC50 240 µg/l Fresh water	Daphnia - <i>Daphnia pulex</i>	48 hours
	Acute IC50 13.4 µg/l Marine water	Aquatic plants - <i>Zostera muelleri</i>	72 hours
	Acute LC50 373.9 µg/l Marine water	Crustaceans - <i>Acartia tonsa</i> - Adult	48 hours
	Acute LC50 1.25 ppm Fresh water	Fish - <i>Barbodes carnaticus</i>	96 hours
	Chronic IC10 1.17 µg/l Marine water	Aquatic plants - <i>Zostera muelleri</i>	72 hours
	Chronic NOEC 0.002 mg/l Fresh water	Algae - <i>Scenedesmus acutus</i> <i>var. acutus</i> - Exponential growth phase	3 days
Diuron (ISO)	Chronic NOEC 25 µg/l Fresh water	Crustaceans - <i>Ceriodaphnia sp.</i>	21 days
	Chronic NOEC 3 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
	Chronic NOEC 0.26 ppb Fresh water	Fish - <i>Poecilia reticulata</i> - Adult	16 weeks
	Acute EC50 821 µg/l Fresh water	Algae - <i>Chlorella fusca ssp.</i> <i>fusca</i> - Exponential growth phase	96 hours
	Acute EC50 0.018 mg/l Fresh water	Algae - <i>Scenedesmus</i> <i>quadricauda</i>	96 hours
	Acute LC50 35 ppm Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
	Chronic NOEC 10 µg/l Fresh water	Algae - <i>Chlorella pyrenoidosa</i> - Exponential growth phase	96 hours
	Acute EC50 0.0013 mg/l Fresh water	Algae - <i>Chlorella pyrenoidosa</i>	96 hours
	Acute EC50 2.26 µg/l Marine water	Algae - <i>Coccolithus huxleyi</i> - Exponential growth phase	72 hours
	Acute EC50 0.005 mg/l Fresh water	Aquatic plants - <i>Lemna sp.</i>	96 hours
3-Cyclohexyl- 6-dimethylamino-1-methyl- 1,2,3,4-tetrahydro- 1,3,5-triazine-2,4-dione	Acute EC50 7.2 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
	Acute IC50 2.41 µg/l Marine water	Aquatic plants - <i>Halodule</i> <i>uninervis</i>	72 hours
	Acute LC50 380 µg/l Fresh water	Crustaceans - <i>Gammarus</i> <i>lacustris</i>	48 hours
	Acute LC50 500 µg/l Fresh water	Fish - <i>Morone saxatilis</i> - Larvae	96 hours
	Chronic EC10 0.11 µg/l Fresh water	Algae - <i>Fragilaria capucina</i> - Exponential growth phase	96 hours
	Chronic NOEC 0.34 µg/l Marine water	Aquatic plants - <i>Zostera muelleri</i>	72 hours
	Chronic NOEC 26.4 ppb	Fish - <i>Pimephales promelas</i>	60 days
	Acute EC50 0.073 mg/l Fresh water	Aquatic plants - <i>Lemna sp.</i>	96 hours
	Acute EC50 85 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute IC50 4.4 µg/l Marine water	Aquatic plants - <i>Zostera muelleri</i>	72 hours
Linuron (ISO)	Acute LC50 71.6 mg/l Fresh water	Crustaceans - <i>Pacifastacus</i> <i>leniusculus</i> - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 146.7 ppm Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
	Chronic NOEC 0.37 µg/l Marine water	Aquatic plants - <i>Halodule</i> <i>uninervis</i>	72 hours
	Chronic NOEC 0.1 mg/l Fresh water	Crustaceans - <i>Copepoda</i>	21 days
	Chronic NOEC 20 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
	Chronic NOEC 85.5 µg/l Fresh water	Fish - <i>Salmo salar</i> - Yolk-sac larvae	396 days
	Acute EC50 6 µg/l Fresh water	Algae - <i>Scenedesmus acutus</i>	3 days

## Section 12. Ecological information

2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	Acute EC50 0.12 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 0.89 ppm Marine water	Fish - <i>Cyprinodon variegatus</i>	96 hours
Methabenzthiazuron (ISO)	Chronic EC10 1.2 µg/l Fresh water	Algae - <i>Scenedesmus acutus</i>	3 days
	Chronic NOEC 4.3 to 5.1 µg/l Fresh water	Crustaceans - <i>Crustacea</i>	21 days
Metoxuron (ISO)	Chronic NOEC 0.13 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
	Chronic NOEC 1 µg/l Fresh water	Fish - <i>Pimephales promelas</i> - Adult	28 days
prometryn	Acute EC50 0.647 mg/l	Algae - <i>Prorocentrum minimum</i> - Exponential growth phase	72 hours
	Chronic NOEC 0.01 mg/l	Algae - <i>Prorocentrum minimum</i> - Exponential growth phase	72 hours
Terbutylazine	Acute EC50 0.033 mg/l Fresh water	Algae - <i>Scenedesmus quadricauda</i>	96 hours
	Acute LC50 122000 µg/l Fresh water	Crustaceans - <i>Cyclops strenuus</i>	48 hours
desethylterbutylazine	Acute LC50 160000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 40 mg/l Fresh water	Fish - <i>Rasbora heteromorpha</i>	96 hours
desethylterbutylazine	Acute EC50 0.00165 mg/l Fresh water	Algae - <i>Scenedesmus acutus</i> var. <i>acutus</i>	96 hours
	Acute EC50 9700 µg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
desethylterbutylazine	Acute LC50 17 mg/l Fresh water	Crustaceans - <i>Pacifastacus leniusculus</i> - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 2300 µg/l Fresh water	Fish - <i>Danio rerio</i> - Larvae	96 hours
desethylterbutylazine	Chronic NOEC 2.5 µg/l Fresh water	Algae - <i>Chlamydomonas reinhardtii</i>	4 days
	Chronic NOEC 1 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
desethylterbutylazine	Chronic NOEC 0.51 µg/l Fresh water	Fish - <i>Carassius</i> sp. - Juvenile (Fledgling, Hatchling, Weanling)	60 days
	Acute EC50 0.016 mg/l Fresh water	Algae - <i>Desmodesmus subspicatus</i> - Exponential growth phase	72 hours
desethylterbutylazine	Acute EC50 100 to 150 µg/l Fresh water	Aquatic plants - <i>Lemna minor</i>	3 days
	Acute EC50 21.2 ppm Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
desethylterbutylazine	Acute LC50 1.6 ppm Fresh water	Fish - <i>Poecilia reticulata</i>	96 hours
	Chronic NOEC 5 µg/l Marine water	Algae - <i>Skeletonema marinoi</i>	4 days
desethylterbutylazine	Chronic NOEC 820 µg/l Fresh water	Fish - <i>Cyprinus carpio</i> - Embryo	30 days
	Chronic NOEC 1.8 µg/l Fresh water	Fish - <i>Cyprinus carpio</i> - Egg	36 days

### Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
2D-LC Solution Acetonitrile	OECD 310 Ready Biodegradability - CO <sub>2</sub> in Sealed Vessels (Headspace Test)	70 % - Readily - 21 days	-	Activated sludge
Atrazine (ISO)	-	9.86 % - Not readily - 28 days	-	-
Diuron (ISO)	OECD 301F Ready Biodegradability - Manometric Respirometry Test	0 % - Not readily - 28 days	-	-

## Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
<b>Formic Acid</b> Formic acid	-	-	Readily
<b>2D-LC Solution</b> Acetonitrile	-	-	Readily
Acetone	-	-	Readily
Atrazine (ISO)	-	-	Not readily
Diuron (ISO)	-	-	Not readily

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>Formic Acid</b> Formic acid	-2.3	-	Low
<b>2D-LC Solution</b> Acetonitrile	-0.34	3	Low
Acetone	-0.23	3	Low
Atrazine (ISO)	2.59	7.94	Low
1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)- (1-methylethyl)-	1.51	-	Low
Chlorotoluron (ISO)	2.41	-	Low
Diuron (ISO)	2.84	5.2	Low
3-Cyclohexyl- 6-dimethylamino-1-methyl- 1,2,3,4-tetrahydro- 1,3,5-triazine-2,4-dione	1.85	-	Low
Linuron (ISO)	3.2	17.78	Low
2-Chloro-N- (2,6-dimethylphenyl)-N-(1H- pyrazol-1-ylmethyl)acetamide	2.13	-	Low
Methabenzthiazuron (ISO)	2.64	-	Low
Metoxuron (ISO)	1.64	-	Low
prometryn	3.51	-	Low
Terbutylazine	3.21	-	Low

### Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

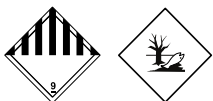
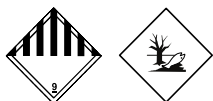

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and



## Section 13. Disposal considerations

runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	TDG Classification	IMDG	IATA
UN number	UN3316	UN3316	UN3316
UN proper shipping name	CHEMICAL KIT	CHEMICAL KIT	Chemical kit
Transport hazard class(es)	9 	9 	9 
Packing group	II	II	II
Environmental hazards	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

**Proof of classification statement** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark).

### Additional information

#### TDG Classification

: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). The marine pollutant mark is not required when transported by road or rail.  
**Passenger Carrying Road or Rail Index** 10  
**Special provisions** 65, 141

#### IMDG

: The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.  
**Emergency schedules** F-A, \_S-P\_  
**Special provisions** 251, 340

#### IATA

: The environmentally hazardous substance mark may appear if required by other transportation regulations.  
**Quantity limitation** Passenger and Cargo Aircraft: 10 kg. Packaging instructions: 960. Cargo Aircraft Only: 10 kg. Packaging instructions: 960. Limited Quantities - Passenger Aircraft: 1 kg. Packaging instructions: Y960.  
**Special provisions** A44, A163

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to IMO instruments** : Not available.

## Section 15. Regulatory information

### Canadian lists

**Canadian NPRI** : The following components are listed: formic acid; acetonitrile

**CEPA Toxic substances** : None of the components are listed.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

## Section 15. Regulatory information

### Montreal Protocol

Not listed.

### Stockholm Convention on Persistent Organic Pollutants

Not listed.

### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

**Canada** : Not determined.

**United States** : At least one component is inactive.

## Section 16. Other information

### History

**Date of issue/Date of revision** : 04/03/2024

**Date of previous issue** : 05/11/2023

**Version** : 3

### Key to abbreviations

: ATE = Acute Toxicity Estimate  
 BCF = Bioconcentration Factor  
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
 HPR = Hazardous Products Regulations  
 IATA = International Air Transport Association  
 IBC = Intermediate Bulk Container  
 IMDG = International Maritime Dangerous Goods  
 LogPow = logarithm of the octanol/water partition coefficient  
 MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
 N/A = Not available  
 UN = United Nations

### Procedure used to derive the classification

Classification	Justification
<b>Formic Acid</b> FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 3 SKIN CORROSION - Category 1A SERIOUS EYE DAMAGE - Category 1 Health Hazards Not Otherwise Classified - Category 1	On basis of test data On basis of test data On basis of test data Expert judgment Expert judgment On basis of test data
<b>2D-LC Solution</b> FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 EYE IRRITATION - Category 2A SKIN SENSITIZATION - Category 1 CARCINOGENICITY - Category 2 TOXIC TO REPRODUCTION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 AQUATIC HAZARD (ACUTE) - Category 1	Expert judgment Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method

## Section 16. Other information

AQUATIC HAZARD (LONG-TERM) - Category 1	Calculation method
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✔ Indicates information that has changed from previously issued version.

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