# Material Safety Data Sheet

Agilent Technologies

Agilent Technologies Australia Pty Ltd
679 Springvale Road
Mulgrave
Victoria 3170, Australia
1800 802 402

**Multiple Heart-Cutting Starter Kit, Part Number G4242-68000**

## 1 . Identification of the material and supplier

**Names**

| | | |
|---|---|---|
| **Product name** | : | Multiple Heart-Cutting Starter Kit, Part Number G4242-68000 |
| **Part No. (Chemical Kit)** | : | G4242-68000 |
| **Part No.** | : | 2D-LC Solution, Part Number 5190-6895 5190-6895<br>Formic Acid, Part Number G2453-85060 G2453-85060 |
| **ADG** | : | CHEMICAL KIT |

**Supplier**

| | | |
|---|---|---|
| **Supplier/Manufacturer** | : | Agilent Technologies Australia Pty Ltd<br>679 Springvale Road<br>Mulgrave<br>Victoria 3170, Australia<br>1800 802 402 |
| **Emergency telephone number** | : | CHEMTREC®: +(61)-290372994 |

**Uses**

| | | | |
|---|---|---|---|
| **Area of application** | : | 2D-LC Solution, Part Number 5190-6895 | Industrial applications, Professional applications. |
| | | Formic Acid, Part Number G2453-85060 | Industrial applications, Professional applications. |
| **Material uses** | : | Analytical reagent. | |
| | | 2D-LC Solution, Part Number 5190-6895 | 1 x 2 ml |
| | | Formic Acid, Part Number G2453-85060 | 5 ml |

## 2 . Hazards identification

| | | | |
|---|---|---|---|
| **Classification** | : | 2D-LC Solution, Part Number 5190-6895 | F; R11<br>Xn; R20/21/22<br>Xi; R36<br>R66<br>N; R50/53 |
| | | Formic Acid, Part Number G2453-85060 | C; R35 |
| **Risk phrases** | : | 2D-LC Solution, Part Number 5190-6895 | R11- Highly flammable.<br>R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.<br>R36- Irritating to eyes.<br>R66- Repeated exposure may cause skin dryness or cracking.<br>R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. |
| | | Formic Acid, Part Number G2453-85060 | R35- Causes severe burns. |
| **Safety phrases** | : | 2D-LC Solution, Part Number 5190-6895 | S36/37- Wear suitable protective clothing and gloves.<br>S61- Avoid release to the environment. Refer to special instructions/safety data sheet. |
| | | Formic Acid, Part Number G2453-85060 | S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. |

## 2 . Hazards identification

S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**Statement of hazardous/ dangerous nature** : 2D-LC Solution, Part Number 5190-6895 — HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

Formic Acid, Part Number G2453-85060 — HAZARDOUS SUBSTANCE. DANGEROUS GOODS.

## 3 . Composition/information on ingredients

**Mixture** : 2D-LC Solution, Part Number 5190-6895 — Yes.

Formic Acid, Part Number G2453-85060 — Yes.

| Ingredient name | CAS number | % |
|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | |
| Acetonitrile | 75-05-8 | >60 |
| Acetone | 67-64-1 | 10 - <30 |
| 1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)-(1-methylethyl)- | 6190-65-4 | <10 |
| Diuron (ISO) | 330-54-1 | <10 |
| 3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3, 5-triazine-2,4-dione | 51235-04-2 | <10 |
| Linuron (ISO) | 330-55-2 | <10 |
| prometryn | 7287-19-6 | <10 |
| Terbuthylazine | 5915-41-3 | <10 |
| **Formic Acid, Part Number G2453-85060** | | |
| Formic acid | 64-18-6 | >60 |

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

## 4 . First-aid measures

**Inhalation** : 2D-LC Solution, Part Number 5190-6895 — Get medical attention immediately. 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. 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.

Formic Acid, Part Number G2453-85060 — Get medical attention immediately. 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

# 4 . First-aid measures

| | | | |
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| | | | 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. |
| **Ingestion** | : | 2D-LC Solution, Part Number 5190-6895 | Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. 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. |
| | | Formic Acid, Part Number G2453-85060 | Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. 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. |
| **Skin contact** | : | 2D-LC Solution, Part Number 5190-6895 | Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. |
| | | Formic Acid, Part Number G2453-85060 | Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse. |

# 4 . First-aid measures

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| **Eye contact** | : | 2D-LC Solution, Part Number 5190-6895 | 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. |
| | | Formic Acid, Part Number G2453-85060 | Get medical attention immediately. 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. |
| **Protection of first-aiders** | : | 2D-LC Solution, Part Number 5190-6895 | 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. |
| | | Formic Acid, Part Number G2453-85060 | 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. |
| **Advice to doctor** | : | 2D-LC Solution, Part Number 5190-6895 | 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. |
| | | Formic Acid, Part Number G2453-85060 | No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |

# 5 . Fire-fighting measures

**Extinguishing media**

| | | | |
|---|---|---|---|
| **Suitable** | : | 2D-LC Solution, Part Number 5190-6895 | Use dry chemical, $CO_2$, water spray (fog) or foam. |
| | | Formic Acid, Part Number G2453-85060 | Use dry chemical, $CO_2$, water spray (fog) or foam. |
| **Not suitable** | : | 2D-LC Solution, Part Number 5190-6895 | Do not use water jet. |
| | | Formic Acid, Part Number G2453-85060 | Do not use water jet. |
| **Special exposure hazards** | : | 2D-LC Solution, Part Number 5190-6895 | 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. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. |
| | | Formic Acid, Part Number G2453-85060 | 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 |

## 5 . Fire-fighting measures

| | | |
|---|---|---|
| | | containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. |
| | 2D-LC Solution, Part Number 5190-6895 | Highly flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. |
| | Formic Acid, Part Number G2453-85060 | Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. |
| **Hazardous thermal decomposition products** : | 2D-LC Solution, Part Number 5190-6895 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide<br>nitrogen oxidescyanides |
| | Formic Acid, Part Number G2453-85060 | Decomposition products may include the following materials:<br>carbon dioxide<br>carbon monoxide |
| **Special protective equipment for fire-fighters** : | Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. | |
| **Hazchem code** : | 2Z | |

## 6 . Accidental release measures

| | | |
|---|---|---|
| **Personal precautions** : | 2D-LC Solution, Part Number 5190-6895 | 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). |
| | Formic Acid, Part Number G2453-85060 | 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). |
| **Environmental precautions** : | 2D-LC Solution, Part Number 5190-6895 | Avoid dispersal of spilt 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. |
| | Formic Acid, Part Number G2453-85060 | Avoid dispersal of spilt 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). |

## 6 . Accidental release measures

| | | | |
|---|---|---|---|
| **Methods for cleaning up** | : | 2D-LC Solution, Part Number 5190-6895 | 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. |
| | | Formic Acid, Part Number G2453-85060 | 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. |

## 7 . Handling and storage

| | | | |
|---|---|---|---|
| **Handling** | : | 2D-LC Solution, Part Number 5190-6895 | Put on appropriate personal protective equipment (see Section 8). 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. Do not breathe vapour or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Refer to special instructions/safety data sheet. 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 non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container. |
| | | Formic Acid, Part Number G2453-85060 | Put on appropriate personal protective equipment (see Section 8). 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. Do not get in eyes or on skin or clothing. Do not breathe vapour 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, |

# 7 . Handling and storage

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 non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

**Storage**

: 2D-LC Solution, Part Number 5190-6895

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. 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

Formic Acid, Part Number G2453-85060

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. 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

# 8 . Exposure controls/personal protection

**Occupational exposure limits**

| Ingredient name | Exposure limits |
|---|---|
| **2D-LC Solution, Part Number 5190-6895** | |
| Acetonitrile | **Safe Work Australia (Australia, 4/2013). Absorbed through skin.**<br>STEL: 101 mg/m³ 15 minutes.<br>STEL: 60 ppm 15 minutes.<br>TWA: 67 mg/m³ 8 hours.<br>TWA: 40 ppm 8 hours. |
| Acetone | **Safe Work Australia (Australia, 4/2013).**<br>STEL: 2375 mg/m³ 15 minutes.<br>STEL: 1000 ppm 15 minutes.<br>TWA: 1185 mg/m³ 8 hours.<br>TWA: 500 ppm 8 hours. |
| Diuron (ISO) | **Safe Work Australia (Australia, 4/2013).**<br>TWA: 10 mg/m³ 8 hours. |
| **Formic Acid, Part Number G2453-85060** | |
| Formic acid | **Safe Work Australia (Australia, 4/2013).**<br>STEL: 19 mg/m³ 15 minutes. |

# 8 . Exposure controls/personal protection

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|---|---|
| | STEL: 10 ppm 15 minutes.<br>TWA: 9.4 mg/m³ 8 hours.<br>TWA: 5 ppm 8 hours. |

**No additional exposure standard allocated for other ingredients/components covered by the MSDS other than those listed in the table above.**

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**Exposure controls**

**Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**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.

**Eyes** : 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 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.

**Hands** : 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.

**Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Skin** : 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.

**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.

# 9 . Physical and chemical properties

| | | | |
|---|---|---|---|
| **Physical state** | : | 2D-LC Solution, Part Number 5190-6895 | Liquid. |
| | | Formic Acid, Part Number G2453-85060 | Liquid. |
| **Colour** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Clear. Colourless. |
| **Odour** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Pungent. |

# 9 . Physical and chemical properties

| | | | |
|---|---|---|---|
| **Odour threshold** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Not available. |
| **Boiling point** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | 101°C (213.8°F) |
| **Melting point** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | 8°C (46.4°F) |
| **Vapour pressure** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | 5.3 kPa (40 mm Hg) [room temperature] |
| **Relative density** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Not available. |
| **Flash point** | : | 2D-LC Solution, Part Number 5190-6895 | Closed cup: -18 to 23°C (-0.4 to 73.4°F) |
| | | Formic Acid, Part Number G2453-85060 | Closed cup: 59°C (138.2°F) |
| **Flammable limits** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Lower: 18%<br>Upper: 57% |
| **Vapour density** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | 1.6 [Air = 1] |
| **pH** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Not available. |
| **Viscosity** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Not available. |
| **Auto-ignition temperature** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | 601°C (1113.8°F) |
| **Evaporation rate** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Not available. |
| **Solubility** | : | 2D-LC Solution, Part Number 5190-6895 | Not available. |
| | | Formic Acid, Part Number G2453-85060 | Easily soluble in the following materials: cold water and hot water. |

## 10 . Stability and reactivity

| | | | |
|---|---|---|---|
| **Chemical stability** | : | 2D-LC Solution, Part Number 5190-6895 | The product is stable. |
| | | Formic Acid, Part Number G2453-85060 | The product is stable. |
| **Possibility of hazardous reactions** | : | 2D-LC Solution, Part Number 5190-6895 | Under normal conditions of storage and use, hazardous reactions will not occur. |
| | | Formic Acid, Part Number G2453-85060 | Under normal conditions of storage and use, hazardous reactions will not occur. |
| **Conditions to avoid** | : | 2D-LC Solution, Part Number 5190-6895 | Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. |
| | | Formic Acid, Part Number G2453-85060 | Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. |
| **Materials to avoid** | : | 2D-LC Solution, Part Number 5190-6895 | oxidizing materials |
| | | Formic Acid, Part Number G2453-85060 | Reactive or incompatible with the following materials:<br>oxidizing materials |
| **Hazardous decomposition products** | : | 2D-LC Solution, Part Number 5190-6895 | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| | | Formic Acid, Part Number G2453-85060 | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

## 11 . Toxicological information

**Potential acute health effects**

| | | | |
|---|---|---|---|
| **Inhalation** | : | 2D-LC Solution, Part Number 5190-6895 | Harmful by inhalation. Can cause central nervous system (CNS) depression. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. |
| | | Formic Acid, Part Number G2453-85060 | May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. |
| **Ingestion** | : | 2D-LC Solution, Part Number 5190-6895 | Harmful if swallowed. Can cause central nervous system (CNS) depression. |
| | | Formic Acid, Part Number G2453-85060 | May cause burns to mouth, throat and stomach. |
| **Skin contact** | : | 2D-LC Solution, Part Number 5190-6895 | Harmful in contact with skin. Defatting to the skin. May cause skin dryness and irritation. |
| | | Formic Acid, Part Number G2453-85060 | Severely corrosive to the skin. Causes severe burns. |
| **Eye contact** | : | 2D-LC Solution, Part Number 5190-6895 | Irritating to eyes. |
| | | Formic Acid, Part Number G2453-85060 | Severely corrosive to the eyes. Causes severe burns. |

**Acute toxicity**

| Product/ingredient name | Result | Species | Dose | Exposure |
|---|---|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | | | |
| Acetonitrile | LC50 Inhalation Vapour | Rat | 17100 ppm | 4 hours |
| | LD50 Dermal | Rabbit | 980 mg/kg | - |
| | LD50 Oral | Rat | 2460 mg/kg | - |
| Acetone | LD50 Oral | Rat | 5800 mg/kg | - |
| Diuron (ISO) | LD50 Dermal | Rat | >5 g/kg | - |
| | LD50 Oral | Rat | 1 g/kg | - |
| 3-Cyclohexyl- | LD50 Dermal | Rabbit | >5278 mg/kg | - |

# 11 . Toxicological information

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|---|---|---|---|---|
| 6-dimethylamino-1-methyl-1, 2,3,4-tetrahydro-1,3, 5-triazine-2,4-dione | | | | |
| | LD50 Dermal | Rat | 5278 mg/kg | - |
| | LD50 Oral | Rat | 1690 mg/kg | - |
| Linuron (ISO) | LC50 Inhalation Dusts and mists | Rat | 48 mg/m³ | 4 hours |
| | LD50 Dermal | Rabbit | >5 g/kg | - |
| | LD50 Oral | Rat | 1146 mg/kg | - |
| prometryn | LD50 Oral | Rat | 1802 mg/kg | - |
| Terbuthylazine | LD50 Oral | Rat | 1845 mg/kg | - |
| **Formic Acid, Part Number G2453-85060** | | | | |
| Formic acid | LC50 Inhalation Dusts and mists | Rat | 7400 mg/m³ | 4 hours |
| | LD50 Oral | Rat | 730 mg/kg | - |

**Conclusion/Summary** : Not available.

## Potential chronic health effects

### Chronic toxicity

**Conclusion/Summary** : Not available.

### Irritation/Corrosion

| Product/ingredient name | Result | Species | Score | Exposure | Observation |
|---|---|---|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | | | | |
| Acetonitrile | Eyes - Moderate irritant | Rabbit | - | 24 hours 100 microliters | - |
| | Skin - Mild irritant | Rabbit | - | 500 milligrams | - |
| Acetone | Eyes - Mild irritant | Rabbit | - | 10 microliters | - |
| | Eyes - Moderate irritant | Rabbit | - | 24 hours 20 milligrams | - |
| | Skin - Mild irritant | Rabbit | - | 24 hours 500 milligrams | - |
| | Skin - Mild irritant | Rabbit | - | 395 milligrams | - |
| 3-Cyclohexyl-6-dimethylamino-1-methyl-1, 2,3,4-tetrahydro-1,3, 5-triazine-2,4-dione | Eyes - Moderate irritant | Rabbit | - | 48 milligrams | - |
| prometryn | Eyes - Mild irritant | Rabbit | - | 80 milligrams | - |
| **Formic Acid, Part Number G2453-85060** | | | | | |
| Formic acid | Eyes - Severe irritant | Rabbit | - | 122 milligrams | - |

**Conclusion/Summary** : Not available.

### Sensitiser

**Conclusion/Summary** : Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

# 11 . Toxicological information

| Product name | Carcinogenic effects | Mutagenic effects | Developmental effects | Fertility effects |
|---|---|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | | | |
| Diuron (ISO) | Carc. Cat. 3; R40 | - | - | - |
| Linuron (ISO) | Carc. Cat. 3; R40 | - | Repr. Cat. 2; R61 | Repr. Cat. 3; R62 |

**Chronic effects** :
- 2D-LC Solution, Part Number 5190-6895: Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
- Formic Acid, Part Number G2453-85060: No known significant effects or critical hazards.

**Carcinogenicity** :
- 2D-LC Solution, Part Number 5190-6895: No known significant effects or critical hazards.
- Formic Acid, Part Number G2453-85060: No known significant effects or critical hazards.

**Mutagenicity** :
- 2D-LC Solution, Part Number 5190-6895: No known significant effects or critical hazards.
- Formic Acid, Part Number G2453-85060: No known significant effects or critical hazards.

**Teratogenicity** :
- 2D-LC Solution, Part Number 5190-6895: No known significant effects or critical hazards.
- Formic Acid, Part Number G2453-85060: No known significant effects or critical hazards.

**Developmental effects** :
- 2D-LC Solution, Part Number 5190-6895: No known significant effects or critical hazards.
- Formic Acid, Part Number G2453-85060: No known significant effects or critical hazards.

**Fertility effects** :
- 2D-LC Solution, Part Number 5190-6895: No known significant effects or critical hazards.
- Formic Acid, Part Number G2453-85060: No known significant effects or critical hazards.

**Over-exposure signs/symptoms**

**Inhalation** :
- 2D-LC Solution, Part Number 5190-6895: Adverse symptoms may include the following:
  nausea or vomiting
  headache
  drowsiness/fatigue
  dizziness/vertigo
  unconsciousness
- Formic Acid, Part Number G2453-85060: No specific data.

**Ingestion** :
- 2D-LC Solution, Part Number 5190-6895: No specific data.
- Formic Acid, Part Number G2453-85060: Adverse symptoms may include the following:
  stomach pains

**Skin** :
- 2D-LC Solution, Part Number 5190-6895: Adverse symptoms may include the following:
  irritation
  dryness
  cracking
- Formic Acid, Part Number G2453-85060: Adverse symptoms may include the following:
  pain or irritation
  redness
  blistering may occur

**Eyes** :
- 2D-LC Solution, Part Number 5190-6895: Adverse symptoms may include the following:
  irritation
  watering
  redness
- Formic Acid, Part Number G2453-85060: Adverse symptoms may include the following:
  pain
  watering
  redness

# 11 . Toxicological information

**Other adverse symptoms** : 2D-LC Solution, Part Number 5190-6895: Not available.

Formic Acid, Part Number G2453-85060: Not available.

**Target organs** : 2D-LC Solution, Part Number 5190-6895: Contains material which may cause damage to the following organs: blood, kidneys, lungs, liver, cardiovascular system, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

Formic Acid, Part Number G2453-85060: Contains material which may cause damage to the following organs: blood, kidneys, upper respiratory tract, skin, eye, lens or cornea.

# 12 . Ecological information

**Ecotoxicity** : This material is very toxic to aquatic life with long lasting effects.

**Aquatic ecotoxicity**

| Product/ingredient name | Result | Species | Exposure |
|---|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | | |
| Acetonitrile | Acute IC50 3685000 µg/l Fresh water | Aquatic plants - Lemna minor | 96 hours |
| | Acute LC50 3600000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 100 mg/l Fresh water | Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) | 96 hours |
| | Chronic NOEC 1000000 µg/l Fresh water | Aquatic plants - Lemna minor | 96 hours |
| | Chronic NOEC 160000 µg/l Fresh water | Daphnia - Daphnia magna | 21 days |
| Acetone | Acute EC50 20.565 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Acute LC50 6000000 µg/l Fresh water | Crustaceans - Gammarus pulex | 48 hours |
| | Acute LC50 10000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 100 mg/l Fresh water | Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling) | 96 hours |
| | Chronic NOEC 4.95 mg/l Marine water | Algae - Ulva pertusa | 96 hours |
| | Chronic NOEC 0.016 ml/L Fresh water | Crustaceans - Daphniidae | 21 days |
| | Chronic NOEC 0.1 ml/L Fresh water | Daphnia - Daphnia magna - Neonate | 21 days |
| | Chronic NOEC 5 µg/l Marine water | Fish - Gasterosteus aculeatus - Larvae | 42 days |
| 1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)-(1-methylethyl)- | Acute LC50 2000 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 96 hours |
| Diuron (ISO) | Acute EC50 2.26 µg/l Marine water | Algae - Coccolithus huxleyi - Exponential growth phase | 72 hours |
| | Acute EC50 0.0007 mg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 96 hours |
| | Acute EC50 0.005 mg/l Fresh water | Aquatic plants - Lemna sp. | 96 hours |
| | Acute EC50 8.4 ppm Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 380 µg/l Fresh water | Crustaceans - Gammarus lacustris | 48 hours |
| | Acute LC50 500 µg/l Fresh water | Fish - Morone saxatilis - Larvae | 96 hours |
| | Chronic NOEC 0.54 µg/l Marine water | Algae - Coccolithus huxleyi - Exponential growth phase | 72 hours |
| | Chronic NOEC 26.4 ppb | Fish - Pimephales promelas | 60 days |
| 3-Cyclohexyl-6-dimethylamino-1-methyl-1, 2,3,4-tetrahydro-1,3, 5-triazine-2,4-dione | Acute EC50 56 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata - Exponential growth phase | 3 days |
| | Acute EC50 24.5 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 96 hours |
| | Acute EC50 0.073 mg/l Fresh water | Aquatic plants - Lemna sp. | 96 hours |
| | Acute EC50 85 ppm Fresh water | Daphnia - Daphnia magna | 48 hours |

# 12 . Ecological information

| | | | |
|---|---|---|---|
| | Acute LC50 94 ppm Marine water | Crustaceans - Decapoda - Embryo | 48 hours |
| | Acute LC50 120 ppm Fresh water | Fish - Oreochromis niloticus | 96 hours |
| | Chronic NOEC 0.1 mg/l Fresh water | Crustaceans - Copepoda | 21 days |
| | Chronic NOEC 20 ppm Marine water | Daphnia - Daphnia magna | 21 days |
| | Chronic NOEC 85.5 µg/l Fresh water | Fish - Salmo salar - Yolk-sac larvae | 396 days |
| Linuron (ISO) | Acute EC50 6 µg/l Fresh water | Algae - Scenedesmus acutus | 3 days |
| | Acute EC50 0.12 ppm Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 0.89 ppm Marine water | Fish - Cyprinodon variegatus | 96 hours |
| | Chronic EC10 1.2 µg/l Fresh water | Algae - Scenedesmus acutus | 3 days |
| | Chronic NOEC 4.3 to 5.1 µg/l Fresh water | Crustaceans - Crustacea | 21 days |
| | Chronic NOEC 0.13 ppm Marine water | Daphnia - Daphnia magna | 21 days |
| | Chronic NOEC 0.042 ppm | Fish - Oncorhynchus mykiss | 80 days |
| prometryn | Acute EC50 0.00165 mg/l Fresh water | Algae - Scenedesmus acutus var. acutus | 96 hours |
| | Acute EC50 9700 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 2300 µg/l Fresh water | Fish - Danio rerio - Larvae | 96 hours |
| | Chronic NOEC 1 ppm Marine water | Daphnia - Daphnia magna | 21 days |
| | Chronic NOEC 0.62 ppm | Fish - Pimephales promelas | 32 days |
| Terbuthylazine | Acute EC50 9 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 72 hours |
| | Acute EC50 150 µg/l Fresh water | Aquatic plants - Lemna minor | 3 days |
| | Acute EC50 5000 µg/l Fresh water | Daphnia - Daphnia magna | 48 hours |
| | Acute LC50 1600 µg/l Fresh water | Fish - Poecilia reticulata | 96 hours |
| | Chronic NOEC 2 µg/l Fresh water | Algae - Pseudokirchneriella subcapitata | 72 hours |
| **Formic Acid, Part Number G2453-85060** | | | |
| Formic acid | Acute EC50 151200 to 165600 µg/l Fresh water | Daphnia - Daphnia magna - Larvae | 48 hours |
| | Acute LC50 80000 to 90000 µg/l Marine water | Crustaceans - Carcinus maenas - Adult | 48 hours |

## Other ecological information

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | | |
| Acetonitrile | - | - | Readily |

## Bioaccumulative potential

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| **2D-LC Solution, Part Number 5190-6895** | | | |
| Acetonitrile | -0.34 | - | low |
| Acetone | -0.23 | - | low |
| 1,3,5-Triazine-2,4-diamine, 6-chloro-N(sup 2)-(1-methylethyl)- | 1.51 | - | 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 |
| prometryn | 3.51 | - | low |
| Terbuthylazine | 3.21 | - | low |
| **Formic Acid, Part Number G2453-85060** | | | |
| Formic acid | -2.3 | - | low |

## 12 . Ecological information

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

## 13 . Disposal considerations

**Methods of disposal** : The generation of waste should be avoided or minimised 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

## 14 . Transport information

**Additional information** : **Special provisions**
251, 340

| Regulation | UN number | Proper shipping name | Classes | PG* | Label | Additional information |
|---|---|---|---|---|---|---|
| **ADG** | UN3316 | CHEMICAL KIT | 9 | II |  | **Hazchem code**<br>2Z<br><br>**Special provisions**<br>251, 340 |
| **IMDG** | UN3316 | CHEMICAL KIT. Marine pollutant (Acetone) | 9 | II |   | The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.<br><br>**Emergency schedules (EmS)**<br>F-A, _S-P_<br><br>**Special provisions**<br>251, 340 |
| **IATA** | UN3316 | Chemical kit | 9 | II |  | The environmentally hazardous substance mark may appear if required by other transportation regulations.<br>**Passenger and Cargo Aircraft**Quantity limitation: 10 kg<br>Packaging instructions: 960<br>**Cargo Aircraft Only**<br>Quantity limitation: 10 kg<br>Packaging instructions: 960<br>**Limited Quantities - Passenger Aircraft**<br>Quantity limitation: 1 kg<br>Packaging instructions: Y960<br><br>**Special provisions**<br>A44, A163 |

## 14 . Transport information

PG* : Packing group

## 15 . Regulatory information

**Standard Uniform Schedule of Medicine and Poisons**

5

**Control of Scheduled Carcinogenic Substances**

| Ingredient name | Schedule |
|---|---|
| No listed substance | |

**Australia inventory (AICS)** : At least one component is not listed.

## 16 . Other information

**Remarks** :

**Date of issue** : 26/08/2014

**Date of previous issue** : No previous validation.

**Indicates information that has changed from previously issued version.**

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