Product name: Multiple Heart-Cutting Starter Kit
Part no.: G4242-68000

This product is composed of the following:

Kit Components, Reagents

Box/Module Part number	Box/Module Name	Kit Component Part Number	Kit Component Name	Qty Units	HPR
 -	- -	5190-6895 G2453-85060	2D-LC Solution Formic Acid	1 1	Yes Yes

Article SDSs, if maintained, are available on www.agilent.com. We recommend using the article product code when searching. SDSs are only available for a limited set of countries.

Transport Information for the Kit:

Dangerous Goods classification for: **G4242-68000**

TDG	IMDG	IATA
UN3316, CHEMICAL KIT, 9, II	UN3316, CHEMICAL KIT, 9, II	UN3316, Chemical kit, 9, II

Table of contents

Kit Component Name **Page**

SDSs for each individual Kit component follow this cover sheet.

SAFETY DATA SHEET

Agilent Technologies

Formic Acid

Section 1. Identification

Product identifier : Formic Acid

Chemical name : Formic acid

Part no. : G2453-85060

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

Identified uses : Analytical chemistry.
5 ml ampoule

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

H226	FLAMMABLE LIQUIDS - Category 3
H290	CORROSIVE TO METALS - Category 1
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

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H226 - Flammable liquid and vapor.
H290 - May be corrosive to metals.
H302 - Harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H331 - Toxic if inhaled.
Causes respiratory tract burns.
Causes digestive tract burns.

Precautionary statements

Prevention : 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.
P234 - Keep only in original packaging.
P261 - Avoid breathing vapor.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.

Section 2. Hazard identification

Response : P390 - Absorb spillage to prevent material damage.
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 cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : Not applicable.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Supplemental label elements : Keep container tightly closed. Do not breathe vapor or spray. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Ingredient name	Synonyms	% (w/w)	Identifiers	
Formic acid	Formic acid	100	CAS: 64-18-6	-

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 : 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.

Inhalation : 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.

Skin contact : Get medical attention immediately. Call a poison center or physician. Wash contaminated skin with soap and 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.

Section 4. First-aid measures

Ingestion : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. Corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach. Harmful if swallowed. Corrosive to the digestive tract. Causes burns.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

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

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : 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

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Section 5. Fire-fighting measures

Specific hazards arising from the chemical : 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.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : 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 : 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 : 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.

For emergency responders : 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 : 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).

Methods and materials for containment and cleaning up

Methods for cleaning up : 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. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : 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. Absorb spillage to prevent material damage.

Section 7. Handling and storage

Advice on general occupational hygiene : 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.

Conditions for safe storage, including any incompatibilities : 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 in a corrosion resistant container with a resistant inner liner. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep away from metals. 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.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Formic acid	**CA Saskatchewan Provincial (Canada, 4/2021)** STEL 15 minutes: 10 ppm. TWA 8 hours: 5 ppm. **CA British Columbia Provincial (Canada, 3/2025)** TWA 8 hours: 5 ppm. STEL 15 minutes: 10 ppm. **CA Ontario Provincial (Canada, 6/2019)** TWA 8 hours: 5 ppm. STEL 15 minutes: 10 ppm. **CA Quebec Provincial (Canada, 2/2024)** TWAEV 8 hours: 5 ppm. TWAEV 8 hours: 9.4 mg/m³. STEV 15 minutes: 10 ppm. STEV 15 minutes: 19 mg/m³. **CA Alberta Provincial (Canada, 3/2023)** OEL 8 hours: 9.4 mg/m³. OEL 15 minutes: 10 ppm. OEL 8 hours: 5 ppm. OEL 15 minutes: 19 mg/m³.

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. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 8. Exposure controls/personal protection

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.

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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

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

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

Appearance

Physical state : Liquid. [Clear.]

Color : Colorless.

Odor : Pungent.

Odor threshold : >0.52 ppm

pH : Not available.

Melting point/freezing point : 4°C (39.2°F) [OECD 102]

Initial boiling point and boiling range : 100.23°C (212.4°F) [OECD 103]

Flash point : Closed cup: 49.5°C (121.1°F) [DIN EN ISO 13736]

Evaporation rate : 1.14 (butyl acetate = 1)

Flammability (solid, gas) : Not applicable.

Section 9. Physical and chemical properties

Upper/lower flammability or explosive limits : Lower: 18%
Upper: 51%

Vapor pressure : 4.3 kPa (32.03522 mm Hg) [room temperature] [EU A.4]
17.4 kPa (130.51 mm Hg) [50°C (122°F)]

Vapor density : 1.6 [Air = 1]

Relative density : 1.2

Density : 1.22 g/cm³

Solubility :

Media	Result
water	Soluble

Miscible with water : Yes.

Partition coefficient: n-octanol/water : -2.3 [OECD 107]

Auto-ignition temperature : 434°C (813.2°F)

Decomposition temperature : Not available.

Heat of combustion : -4756670 J/kg

Viscosity : Dynamic (room temperature): 1.8 mPa·s (1.8 cP) [OECD 114]
Kinematic (room temperature): 1.47 mm^2/s (1.47 cSt) [OECD 114]
Kinematic (40°C (104°F)): 1.02 mm^2/s (1.02 cSt) [OECD 114]

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : 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.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials
metals
Reactive or incompatible with the following materials: alkalis.
Slightly reactive or incompatible with the following materials: acids.

Hazardous decomposition products : 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	
Formic acid	Rat - Oral - LD50	730 mg/kg
	Rat - Inhalation - LC50 Vapor	7400 mg/m³ [4 hours]

Conclusion/Summary [Product] : Not available.

Section 11. Toxicological information

Skin corrosion/irritation

Conclusion/Summary [Product] : Not available.

Serious eye damage/eye irritation

Product/ingredient name	Result	
Formic acid	Rabbit - Eyes - Severe irritant	Amount/concentration applied: 122 mg

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Conclusion/Summary [Product] : Not available.

Reproductive toxicity

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Section 11. Toxicological information

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Toxic if inhaled. Corrosive to the respiratory system.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach. Harmful if swallowed. Corrosive to the digestive tract. Causes burns.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

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

Conclusion/Summary [Product] : Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Formic acid	500	N/A	N/A	7.4	N/A

Section 12. Ecological information

Toxicity

Product/ingredient name	Result		
Formic acid	Acute - NOEC - Fresh water	≥100 mg/l [21 days]	Daphnia - *Daphnia magna*
	Acute - EC50 - Fresh water	151.2 mg/l [48 hours]	Daphnia - Water flea - *Daphnia magna* - Larvae

Conclusion/Summary [Product] : Not available.

Persistence and degradability

Conclusion/Summary [Product] : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Formic acid	-	-	Readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Formic acid	-2.3	-	Low

Mobility in soil

Soil/Water partition coefficient : 5.39642 Koc

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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	IMDG	IATA
UN number	UN1779	UN1779	UN1779
UN proper shipping name	FORMIC ACID	FORMIC ACID	Formic acid
Transport hazard class(es)	8 (3) 	8 (3) 	8 (3) 
Packing group	II	II	II
Environmental hazards	No.	No.	No.

Proof of classification statement : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8), 2.18-2.19 (Class 3).

Additional information

Remarks: Excepted Quantity

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.40-2.42 (Class 8), 2.18-2.19 (Class 3).
Explosive Limit and Limited Quantity Index 1
Passenger Carrying Road or Rail Index 1

IMDG : **Emergency schedules** F-E, S-C

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 1 L. Packaging instructions: 851. Cargo Aircraft Only: 30 L. Packaging instructions: 855. Limited Quantities - Passenger Aircraft: 0.5 L. Packaging instructions: Y840.

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.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : This material is not listed.

CEPA Toxic substances : This material is not listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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

Section 15. Regulatory information

Canada : This material is listed or exempted.

United States : This material is active or exempted.

Section 16. Other information

History

Date of issue/Date of revision : 04/29/2026

Date of previous issue : 11/13/2025

Version : 9

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
DOT = Department of Transportation
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
IMO = International Maritime Organization
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
SGG = Segregation Group
TDG = Transportation of Dangerous Goods
UN = United Nations

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 3	Expert judgment
CORROSIVE TO METALS - Category 1	Expert judgment
ACUTE TOXICITY (oral) - Category 4	Regulatory data
ACUTE TOXICITY (inhalation) - Category 3	Regulatory data
SKIN CORROSION - Category 1A	Expert judgment
SERIOUS EYE DAMAGE - Category 1	Expert judgment
Health Hazards Not Otherwise Classified - Category 1	On basis of test data

Indicates information that has changed from previously issued version.

Notice to reader

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

Conforms to HPR 2023

SAFETY DATA SHEET

Agilent Technologies

2D-LC Solution

Section 1. Identification

Product identifier : 2D-LC Solution

Part no. : 5190-6895

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

Identified uses : Reagents and Standards for Analytical Chemistry Laboratory Use
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

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
H350	CARCINOGENICITY - Category 1B
H360	TOXIC TO REPRODUCTION - Category 1B
H400	AQUATIC HAZARD (ACUTE) - Category 1
H410	AQUATIC HAZARD (LONG-TERM) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : 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.
H350 - May cause cancer.
H360 - May damage fertility or the unborn child.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements

Section 2. Hazard identification

Prevention : 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 : 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.
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.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
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.

Storage : Not applicable.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	Synonyms	% (w/w)	Identifiers	
Acetonitrile	Acetonitrile	≥65 - ≤85	CAS: 75-05-8	-
Acetone	Acetone	≥10 - ≤30	CAS: 67-64-1	-
Atrazine (ISO)	Atrazine	≥0.1 - ≤1	CAS: 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	CAS: 6190-65-4	-
Chlorotoluron (ISO)	Chlorotoluron	≥0.1 - ≤1	CAS: 15545-48-9	-
Diuron (ISO)	Diuron	≥0.1 - ≤1	CAS: 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	CAS: 51235-04-2	-
Linuron (ISO)	Linuron (ISO)	≥0.1 - ≤1	CAS: 330-55-2	-
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	Metazachlor	≥0.1 - ≤1	CAS: 67129-08-2	-
Methabenzthiazuron (ISO)	Methabenzthiazuron	≥0.1 - ≤1	CAS: 18691-97-9	-
Metoxuron (ISO)	Metoxuron (ISO)	≥0.1 - ≤1	CAS: 19937-59-8	-
prometryn	Prometryn	≥0.1 - ≤1	CAS: 7287-19-6	-
Terbuthylazine	Terbuthylazine	≥0.1 - ≤1	CAS:	-

Section 3. Composition/information on ingredients

desethylterbutylazine	desethylterbutylazine	≥0.1 - ≤1	5915-41-3 CAS: 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 : 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 : 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. Get medical attention. If necessary, call a poison center or physician. 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.

Skin contact : Wash with plenty of soap and 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. Get medical attention. If necessary, call a poison center or physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. 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. Get medical attention. If necessary, call a poison center or 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled.

Skin contact : Harmful in contact with skin. May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Section 4. First-aid measures

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : 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

Notes to physician : 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.

Specific treatments : No specific treatment.

Protection of first-aiders : 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

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : 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.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
cyanides

Special protective actions for fire-fighters : 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 : 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 : 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. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : 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 : 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 : 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.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin 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.

Advice on general occupational hygiene : 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.

Conditions for safe storage, including any incompatibilities : 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.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Acetonitrile	**CA Saskatchewan Provincial (Canada, 4/2021)** Absorbed through skin. STEL 15 minutes: 30 ppm. TWA 8 hours: 20 ppm. **CA British Columbia Provincial (Canada, 3/2025)** Absorbed through skin. TWA 8 hours: 20 ppm. **CA Ontario Provincial (Canada, 6/2019)** Absorbed through skin. TWA 8 hours: 20 ppm. **CA Quebec Provincial (Canada, 2/2024)** Absorbed through skin. TWAEV 8 hours: 20 ppm. **CA Alberta Provincial (Canada, 3/2023)** OEL 8 hours: 34 mg/m³. OEL 8 hours: 20 ppm.
Acetone	**CA Saskatchewan Provincial (Canada, 4/2021)** STEL 15 minutes: 750 ppm. TWA 8 hours: 500 ppm. **CA British Columbia Provincial (Canada, 3/2025)** TWA 8 hours: 250 ppm. STEL 15 minutes: 500 ppm. **CA Ontario Provincial (Canada, 6/2019)** TWA 8 hours: 250 ppm. STEL 15 minutes: 500 ppm. **CA Quebec Provincial (Canada, 2/2024)** TWAEV 8 hours: 250 ppm. STEV 15 minutes: 500 ppm. **CA Alberta Provincial (Canada, 3/2023)** OEL 8 hours: 1200 mg/m³. OEL 15 minutes: 1800 mg/m³. OEL 8 hours: 500 ppm. OEL 15 minutes: 750 ppm.
Atrazine (ISO)	**CA Saskatchewan Provincial (Canada, 4/2021)** STEL 15 minutes: 10 mg/m³. TWA 8 hours: 5 mg/m³. **CA British Columbia Provincial (Canada, 3/2025)** Repr. TWA 8 hours: 5 mg/m³. **CA Ontario Provincial (Canada, 6/2019)** TWA 8 hours: 2 mg/m³. Form: inhalable particulate matter. **CA Quebec Provincial (Canada, 2/2024)** TWAEV 8 hours: 5 mg/m³. **CA Alberta Provincial (Canada, 3/2023)** OEL 8 hours: 5 mg/m³.
Diuron (ISO)	**CA Saskatchewan Provincial (Canada, 4/2021)** STEL 15 minutes: 20 mg/m³. TWA 8 hours: 10 mg/m³.

Section 8. Exposure controls/personal protection

	CA British Columbia Provincial (Canada, 3/2025) TWA 8 hours: 10 mg/m³. **CA Ontario Provincial (Canada, 6/2019)** TWA 8 hours: 10 mg/m³. **CA Quebec Provincial (Canada, 2/2024)** TWAEV 8 hours: 10 mg/m³. **CA Alberta Provincial (Canada, 3/2023)** OEL 8 hours: 10 mg/m³.
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	**CA Quebec Provincial (Canada, 2/2024)** TWAEV 8 hours: 3 mg/m³. Form: inhalable aerosol fraction.
prometryn	**CA British Columbia Provincial (Canada, 3/2025)** Repr. Notes: No British Columbia exposure limit at this time

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. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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.

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. Contaminated work clothing should not be allowed out of the workplace. 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.

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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Section 8. Exposure controls/personal protection

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

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

Appearance

Physical state : Liquid.

Color : Not available.

Odor : Not available.

Odor threshold : Not available.

pH : Not available.

Melting point/freezing point : Not available.

Initial boiling point and boiling range : Not available.

Flash point : Closed cup: -18 to 23°C (-0.4 to 73.4°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not applicable.

Upper/lower flammability or explosive limits : Not available.

Vapor pressure :

Ingredient name	Vapor Pressure at 20˚C			Vapor pressure at 50˚C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
acetone	180.01463	24	-	-	-	-
acetonitrile	70.88853	9.5	-	-	-	-

Vapor density : Not available.

Relative density : Not available.

Solubility :

Media	Result
water	Soluble

Miscible with water : Yes.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature :

Ingredient name	°C	°F	Method
acetone	465	869	-
acetonitrile	524	975.2	-

Decomposition temperature : Not available.

Viscosity : Dynamic (room temperature): Not available.
Kinematic (room temperature): Not available.
Kinematic (40°C (104°F)): Not available.

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : 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.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : 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	
Acetonitrile	Rat - Oral - LD50	2460 mg/kg
	Rat - Inhalation - LC50 Vapor	17100 ppm [4 hours]
Acetone	Rat - Oral - LD50	5800 mg/kg
Atrazine (ISO)	Rabbit - Dermal - LD50	7500 mg/kg
	Rat - Oral - LD50	672 mg/kg
	Rat - Dermal - LD50	3 g/kg
	Rat - Inhalation - LC50 Dusts and mists	5200 mg/m³ [4 hours]
Chlorotoluron (ISO)	Rat - Oral - LD50	5800 mg/kg
Diuron (ISO)	Rat - Dermal - LD50	>5 g/kg
	Rat - Oral - LD50	1 g/kg
	Rat - Male, Female - Inhalation - LC50 Dusts and mists	>5.05 mg/l [4 hours]
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	Rat - Oral - LD50	1690 mg/kg
	Rat - Dermal - LD50	5278 mg/kg
	Rabbit - Dermal - LD50	>5278 mg/kg
Linuron (ISO)	Rat - Oral - LD50	1146 mg/kg
	Rabbit - Dermal - LD50	>5 g/kg
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	Rat - Oral - LD50	1 g/kg
	Rat - Dermal - LD50	>6810 mg/kg
Metoxuron (ISO)	Rat - Oral - LD50	1600 mg/kg
prometryn	Rat - Oral - LD50	1802 mg/kg
Terbuthylazine	Rat - Oral - LD50	1845 mg/kg
	Rat - Dermal - LD50	>2000 mg/kg
	Rat - Inhalation - LC50 Dusts and mists	>5.3 mg/l [4 hours]

Conclusion/Summary [Product] : Not available.

Skin corrosion/irritation

Product/ingredient name	Result

Section 11. Toxicological information

Acetone	Rabbit - Skin - Mild irritant	Duration of treatment/ exposure: 24 hours Amount/concentration applied: 500 mg
	Rabbit - Skin - Mild irritant	Amount/concentration applied: 395 mg
Atrazine (ISO)	Rabbit - Skin - Mild irritant	Amount/concentration applied: 38 mg

Conclusion/Summary [Product] : Repeated exposure may cause skin dryness or cracking.

Ingredient name	Conclusion/Summary
Acetone	Repeated exposure may cause skin dryness or cracking. Causes mild skin irritation.

Serious eye damage/eye irritation

Product/ingredient name	Result	
Acetonitrile	Rabbit - Eyes - Moderate irritant	Duration of treatment/ exposure: 24 hours Amount/concentration applied: 100 uL
Acetone	Rabbit - Eyes - Mild irritant	Amount/concentration applied: 10 uL
	Rabbit - Eyes - Moderate irritant	Duration of treatment/ exposure: 24 hours Amount/concentration applied: 20 mg
Atrazine (ISO)	Rabbit - Eyes - Severe irritant	Amount/concentration applied: 6320 ug
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	Rabbit - Eyes - Moderate irritant	Amount/concentration applied: 48 mg
prometryn	Rabbit - Eyes - Mild irritant	Amount/concentration applied: 80 mg

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Conclusion/Summary [Product] : Not available.

Ingredient name	Conclusion/Summary
Acetonitrile	May cause respiratory irritation.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Ingredient name	Conclusion/Summary
acetonitrile	May cause respiratory irritation.

Respiratory or skin sensitization

Skin

Section 11. Toxicological information

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Conclusion/Summary [Product] : Not available.

Classification

Product/ingredient name	IARC	NTP	ACGIH
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 [Product] : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Result
Acetone	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
Atrazine (ISO)	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (heart) (oral) - Category 2
Diuron (ISO)	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (blood system) - Category 2
Linuron (ISO)	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (central nervous system (CNS), endocrine) - Category 1
Terbuthylazine	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Section 11. Toxicological information

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled.

Skin contact : Harmful in contact with skin. May cause an allergic skin reaction.

Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : 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

Conclusion/Summary [Product] : Not available.

General : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Reproductive toxicity : May damage fertility or the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
2D-LC Solution	638.8	1405.3	N/A	14.1	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	N/A	1.5
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	N/A
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
Terbuthylazine	1845	2500	N/A	N/A	N/A

Other information : Adverse symptoms may include the following: May cause skin sensitization.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result		
Acetonitrile	Acute - LC50 - Fresh water	3600 mg/l [48 hours]	Daphnia - Water flea - *Daphnia magna*
	Acute - IC50 - Fresh water	3685 mg/l [96 hours]	Aquatic plants - Duckweed - *Lemna minor*
	Chronic - NOEC - Fresh water	160 mg/l [21 days]	Daphnia - Water flea - *Daphnia magna*
	Chronic - NOEC - Fresh water	1000 mg/l [96 hours]	Aquatic plants - Duckweed - *Lemna minor*
	Acute - LC50 - Fresh water	1000 mg/l [96 hours]	Fish - Fathead minnow - *Pimephales promelas*
Acetone	Acute - EC50 - Fresh water	7200 mg/l [96 hours]	Algae - Green algae - *Selenastrum sp.*
	Chronic - NOEC - Marine water	4.95 mg/l [96 hours]	Algae - Green algae - *Ulva pertusa*
	Chronic - NOEC - Fresh water	0.016 ml/l [21 days]	Crustaceans - Daphnia - *Daphniidae*
	Acute - LC50 - Marine water	4.42589 ml/l [48 hours]	Crustaceans - Calanoid copepod - *Acartia tonsa* - Copepodid
	Acute - LC50 - Fresh water	5600 ppm [96 hours]	Fish - Guppy - *Poecilia reticulata*
Atrazine (ISO)	Acute - EC50 - Fresh water	240 µg/l [48 hours]	Daphnia - Water flea - *Daphnia pulex*
	Chronic - NOEC - Fresh water	0.26 ppb [16 weeks]	Fish - Guppy - *Poecilia reticulata* - Adult
	Acute - LC50 - Fresh water	1.25 ppm [96 hours]	Fish - Carnatic Carp - *Barbodes carnaticus*
	Chronic - NOEC - Fresh water	25 µg/l [21 days]	Crustaceans - Water flea - *Ceriodaphnia sp.*

Section 12. Ecological information

	Acute - EC50 - Fresh water	0.004 mg/l [96 hours]	Algae - Green algae - *Raphidocelis subcapitata*
	Chronic - NOEC - Fresh water	0.0005 mg/l [96 hours]	Algae - Green algae - *Raphidocelis subcapitata*
1,3,5-Triazine-2,4-diamine, 6-chloro-N (sup 2)-(1-methylethyl)-	Acute - EC50 - Fresh water	821 µg/l [96 hours]	Algae - Green algae - *Chlorella fusca ssp. fusca* - Exponential growth phase
Chlorotoluron (ISO)	Chronic - NOEC - Fresh water	10 µg/l [96 hours]	Algae - Green algae - *Chlorella pyrenoidosa* - Exponential growth phase
	Acute - LC50 - Fresh water	35 ppm [96 hours]	Fish - Rainbow trout, donaldson trout - *Oncorhynchus mykiss*
	Acute - EC50 - Fresh water	0.0085 mg/l [96 hours]	Algae - Green algae - *Raphidocelis subcapitata*
Diuron (ISO)	Acute - LC50 - Fresh water	500 µg/l [96 hours]	Fish - Striped bass - *Morone saxatilis* - Larvae
	Acute - LC50 - Fresh water	380 µg/l [48 hours]	Crustaceans - Scud - *Gammarus lacustris*
	Chronic - NOEC	26.4 ppb [60 days]	Fish - Fathead minnow - *Pimephales promelas*
	Chronic - EC10 - Fresh water	0.11 µg/l [96 hours]	Algae - Diatom - *Fragilaria capucina* - Exponential growth phase
	Acute - EC50 - Fresh water	0.0007 mg/l [96 hours]	Algae - Green algae - *Raphidocelis subcapitata*
3-Cyclohexyl-6-dimethylamino-1-methyl-1,2,3,4-tetrahydro-1,3,5-triazine-2,4-dione	Chronic - NOEC - Fresh water	85.5 µg/l [396 days]	Fish - Atlantic salmon - *Salmo salar* - Yolk-sac larvae
	Chronic - NOEC - Fresh water	0.1 mg/l [21 days]	Crustaceans - Copepod Subclass - *Copepoda*
	Acute - LC50 - Fresh water	146.7 ppm [96 hours]	Fish - Rainbow trout, donaldson trout - *Oncorhynchus mykiss*
	Acute - LC50 - Fresh water	71.6 mg/l [48 hours]	Crustaceans - Signal crayfish - *Pacifastacus leniusculus* - Juvenile (Fledgling, Hatchling, Weanling)
	Acute - IC50 - Marine water	4.4 µg/l [72 hours]	Aquatic plants - Eel Grass - *Zostera muelleri*
	Chronic - NOEC - Marine water	0.37 µg/l [72 hours]	Aquatic plants - Eel Grass - *Halodule uninervis*
Linuron (ISO)	Chronic - EC10 - Fresh water	1.2 µg/l [3 days]	Algae - Green algae - *Scenedesmus acutus*
	Acute - EC50 - Fresh water	6 µg/l [3 days]	Algae - Green algae - *Scenedesmus acutus*
	Chronic - NOEC - Fresh water	0.13 ppm [21 days]	Daphnia - Water flea - *Daphnia magna*

Section 12. Ecological information

	Acute - LC50 - Marine water	0.89 ppm [96 hours]	Fish - Sheepshead minnow - *Cyprinodon variegatus*
	Acute - EC50 - Fresh water	0.12 ppm [48 hours]	Daphnia - Water flea - *Daphnia magna*
	Chronic - NOEC - Fresh water	1 µg/l [28 days]	Fish - Fathead minnow - *Pimephales promelas* - Adult
2-Chloro-N-(2,6-dimethylphenyl)-N-(1H-pyrazol-1-ylmethyl)acetamide	Chronic - NOEC	0.01 mg/l [72 hours]	Algae - Dinoflagellate - *Prorocentrum minimum* - Exponential growth phase
	Acute - EC50	245 µg/l [96 hours]	Algae - Diatom - *Skeletonema marinoi* - Exponential growth phase
Methabenzthiazuron (ISO)	Acute - EC50 - Fresh water	0.0209 mg/l [96 hours]	Algae - Green algae - *Raphidocelis subcapitata*
Metoxuron (ISO)	Acute - LC50 - Fresh water	122 mg/l [48 hours]	Crustaceans - Cyclopoid copepod - *Cyclops strenuus*
	Acute - LC50 - Fresh water	40 mg/l [96 hours]	Fish - Harlequinfish, red rasbora - *Rasbora heteromorpha*
prometryn	Acute - EC50 - Fresh water	9700 µg/l [48 hours]	Daphnia - Water flea - *Daphnia magna*
	Acute - LC50 - Fresh water	2300 µg/l [96 hours]	Fish - Zebra danio - *Danio rerio* - Larvae
	Acute - EC50 - Fresh water	0.00165 mg/l [96 hours]	Algae - Green algae - *Scenedesmus acutus var. acutus*
	Chronic - NOEC - Fresh water	1 ppm [21 days]	Daphnia - Water flea - *Daphnia magna*
	Chronic - NOEC - Fresh water	0.51 µg/l [60 days]	Fish - Carp - *Carassius sp.* - Juvenile (Fledgling, Hatchling, Weanling)
	Chronic - NOEC - Fresh water	2.5 µg/l [4 days]	Algae - Green algae - *Chlamydomonas reinhardtii*
Terbuthylazine	Acute - EC50 - Fresh water	21.2 ppm [48 hours]	Daphnia - Water flea - *Daphnia magna*
	Chronic - NOEC - Fresh water	820 µg/l [30 days]	Fish - common carp - *Cyprinus carpio* - Embryo
	Acute - LC50 - Fresh water	1.6 ppm [96 hours]	Fish - Guppy - *Poecilia reticulata*
	Acute - EC50 - Fresh water	9 µg/l [72 hours]	Algae - Green algae - *Raphidocelis subcapitata*
	Chronic - NOEC - Fresh water	2 µg/l [72 hours]	Algae - Green algae - *Raphidocelis subcapitata*
desethylterbutylazine	Chronic - NOEC - Fresh water	1.8 µg/l [36 days]	Fish - common carp - *Cyprinus carpio* - Egg

Conclusion/Summary [Product] : Not available.

Section 12. Ecological information

Persistence and degradability

Product/ingredient name	Result		
Acetonitrile	OECD [Ready Biodegradability - CO_2 in Sealed Vessels (Headspace Test)]	70% [21 days] - Readily	-
Atrazine (ISO)	-	9.86% [28 days] - Not readily	-
Diuron (ISO)	OECD 301F [Ready Biodegradability - Manometric Respirometry Test]	0% [28 days] - Not readily	Aerobic
prometryn	OECD [Ready Biodegradability - CO_2 Evolution Test]	0% [28 days] - Not readily	Aerobic

Conclusion/Summary [Product] : Not available.

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Acetonitrile	-	-	Readily
Acetone	-	-	Readily
Atrazine (ISO)	-	-	Not readily
Diuron (ISO)	-	-	Not readily
prometryn	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
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 [OECD 305 C]	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
Terbuthylazine	3.21	-	Low

Mobility in soil

Soil/Water partition coefficient : 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. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	IMDG	IATA
UN number	UN1993	UN1993	UN1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Acetonitrile, Acetone)	FLAMMABLE LIQUID, N.O.S. (Acetonitrile, Acetone)	Flammable liquid, n.o.s. (Acetonitrile, Acetone)
Transport hazard class(es)	3 	3 	3 
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: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark).

Additional information

Remarks: Excepted Quantity

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark).
The marine pollutant mark is not required when transported by road or rail.
Explosive Limit and Limited Quantity Index 1
Passenger Carrying Road or Rail Index 5
Special provisions 16, 150

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
Emergency schedules F-E, _S-E_
Special provisions 274

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.
Quantity limitation Passenger and Cargo Aircraft: 5 L. Packaging instructions: 353. Cargo Aircraft Only: 60 L. Packaging instructions: 364. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y341.
Special provisions A3

Section 14. Transport information

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.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: acetonitrile

CEPA Toxic substances : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

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 : 05/04/2026

Date of previous issue : 08/24/2025

Version : 9

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
DOT = Department of Transportation
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
IMO = International Maritime Organization
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
SGG = Segregation Group
TDG = Transportation of Dangerous Goods
UN = United Nations

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
FLAMMABLE LIQUIDS - Category 2	Expert judgment
ACUTE TOXICITY (oral) - Category 4	Calculation method
ACUTE TOXICITY (dermal) - Category 4	Calculation method
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
EYE IRRITATION - Category 2A	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 1B	Calculation method
TOXIC TO REPRODUCTION - Category 1B	Calculation method
AQUATIC HAZARD (ACUTE) - Category 1	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 1	Calculation method

Indicates information that has changed from previously issued version.

Notice to reader

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