

SAFETY DATA SHEET



CircuitWorks Conductive Pen (UK - Great Britain)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Product name : CircuitWorks Conductive Pen (UK - Great Britain)
Product code : CW2200 STP, CW2200MTP
Product description : Conductive agents
Product type : Liquid.
Other means of identification : Electrical conductive agents
Industrial/Professional use
UFI: JHA8-U02T-S00U-JNPX

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

Identified uses	
Conductive agent Product Application and Material uses Reference Website: or QR code	
Uses advised against	Reason
Other	Industrial/Professional use

1.3 Details of the supplier of the safety data sheet

Manufacturer
Chemtronics
8125 Cobb Center Drive
Kennesaw, GA 30152
Tel. 770-424-4888 or toll free 800-645-5244

Distributor

Importer
ITW Contamination Control BV
Saffierlaan 5
VZ-2132 Hoofddorp
The Netherlands

Email: info@itw-cc.com

Tel: +31 88 1307 400
FAX: +31 88 1307 499
Website: www.Chemtronicseu.com

e-mail address of person responsible for this SDS : Only Representative
Bay 150
Shannon Industrial Estate
Shannon
County Clare
Ireland
V14 DF82
+353 61 771 500
customerservice.shannon@itwpp.com

National contact

SECTION 1: Identification of the substance/mixture and of the company/undertaking

ITW Contamination Control BV
Saffierlaan 5
VZ-2132 Hoofddorp
The Netherlands

Email: info@itw-cc.com

Tel: +31 88 1307 400
FAX: +31 88 1307 499
Website: www.Chemtronicseu.com

1.4 Emergency telephone number

National advisory body/Poison Centre

Telephone number : EMERGENCY HEALTH INFORMATION:
United Kingdom (England or Wales) 0845 46 47 or Scotland 08454 24 24 24 (UK only)

Supplier

Telephone number : Chemtronics Product Information: 800-TECH-401 (800-832-4401)
Chemtronics Customer Service: 800-645-5244

Hours of operation : 8:00 AM to 5:00 PM

Information limitations : EMERGENCY HEALTH INFORMATION:
EMERGENCY SPILL INFORMATION:
Transport information

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to UK CLP/GHS

Flam. Liq. 1, H224
Repr. 2, H361f
STOT RE 2, H373
Aquatic Acute 1, H400
Aquatic Chronic 1, H410

The product is classified as hazardous according to UK CLP Regulation SI 2019/720 as amended.

Ingredients of unknown toxicity : 55 percent of the mixture consists of component(s) of unknown acute oral toxicity
55 percent of the mixture consists of component(s) of unknown acute dermal toxicity
83.5 percent of the mixture consists of component(s) of unknown acute inhalation toxicity

Ingredients of unknown ecotoxicity : Contains 28.5% of components with unknown hazards to the aquatic environment

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Extremely flammable liquid and vapour.
Suspected of damaging fertility.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life with long lasting effects.

Precautionary statements

SECTION 2: Hazards identification

Prevention	: Obtain special instructions before use. Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid release to the environment. Do not breathe vapour.
Response	: Collect spillage. IF exposed or concerned: Get medical advice or attention.
Storage	: Store in a well-ventilated place. Keep cool.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	: Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: Not applicable.
Special packaging requirements	
Containers to be fitted with child-resistant fastenings	: Not applicable.
Tactile warning of danger	: Not applicable.

2.3 Other hazards

Product meets the criteria for PBT or vPvB according to Regulation (EC) No. 1907/2006, Annex XIII	: This mixture does not contain any substances that are assessed to be a PBT or a vPvB.
Other hazards which do not result in classification	: None known.

SECTION 3: Composition/information on ingredients**3.2 Mixtures** : Mixture

Product/ingredient name	Identifiers	%	Classification	Type
silver massive	EC: 231-131-3 CAS: 7440-22-4 Index: 047-004-00-9	≥50 - ≤75	Repr. 2, H361f STOT RE 2, H373 (nervous system) Aquatic Acute 1, H400 (M=1000) Aquatic Chronic 1, H410 (M=1000)	[1] [2]
2-methoxy-1-methylethyl acetate	EC: 203-603-9 CAS: 108-65-6 Index: 607-195-00-7	≥25 - ≤50	Flam. Liq. 3, H226	[2]
n-butyl acetate	EC: 204-658-1 CAS: 123-86-4 Index: 607-025-00-1	<5	Flam. Liq. 3, H226 Eye Irrit. 2, H319 STOT SE 3, H336 Aquatic Chronic 3, H412	[1] [2]
2-butoxyethyl acetate	EC: 203-933-3 CAS: 112-07-2 Index: 607-038-00-2	<5	EUH066 Acute Tox. 4, H312 Acute Tox. 4, H332 Eye Irrit. 2, H319	[1] [2]

Type

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

See Section 16 for the full text of the H statements declared above.

SECTION 3: Composition/information on ingredients

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, are PBTs, vPvBs or Substances of equivalent concern, or have been assigned a workplace exposure limit and hence require reporting in this section.

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

SECTION 4: First aid measures

4.1 Description of 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 following exposure or if feeling unwell. |
| Inhalation | : Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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 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 | : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. 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. 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. |
| Protection of first-aiders | : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |

4.2 Most important symptoms and effects, both acute and delayed

Over-exposure signs/symptoms

- | | |
|---------------------|---|
| Eye contact | : Adverse symptoms may include the following:
irritation
redness
watering |
| Inhalation | : Adverse symptoms may include the following:
nausea or vomiting
headache
dizziness/vertigo
drowsiness/fatigue
unconsciousness |
| Skin contact | : Adverse symptoms may include the following:
irritation
redness |
| Ingestion | : Adverse symptoms may include the following:
Ingestion Seek medical attention. |

4.3 Indication of any immediate medical attention and special treatment needed

- | | |
|----------------------------|---|
| Notes to physician | : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |
| Specific treatments | : No specific treatment. |

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : Extremely flammable liquid and vapour. 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 vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. 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 combustion products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

5.3 Advice for firefighters

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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to British standard BS EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour. Put on appropriate personal protective equipment.

For emergency responders : If specialised 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".

6.2 Environmental precautions

: 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. Collect spillage.

6.3 Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

SECTION 6: Accidental release measures

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). 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 breathe vapour or mist. Do not ingest. 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.

7.2 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 oxidising 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. See Section 10 for incompatible materials before handling or use.

Seveso Directive - Reporting thresholds**Danger criteria**

Category	Notification and MAPP threshold	Safety report threshold
P5a E1	10 tonnes 100 tonnes	50 tonnes 200 tonnes

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Occupational exposure limits**

Product/ingredient name	Exposure limit values
silver massive	EH40/2005 WELs (United Kingdom (UK), 1/2020) TWA 8 hours: 0.1 mg/m ³ .
2-methoxy-1-methylethyl acetate	EH40/2005 WELs (United Kingdom (UK), 1/2020) Absorbed through skin. STEL 15 minutes: 548 mg/m ³ . TWA 8 hours: 50 ppm. TWA 8 hours: 274 mg/m ³ . STEL 15 minutes: 100 ppm.
n-butyl acetate	EH40/2005 WELs (United Kingdom (UK), 1/2020) STEL 15 minutes: 966 mg/m ³ . STEL 15 minutes: 200 ppm. TWA 8 hours: 724 mg/m ³ . TWA 8 hours: 150 ppm.
2-butoxyethyl acetate	EH40/2005 WELs (United Kingdom (UK), 1/2020) Absorbed through skin. TWA 8 hours: 20 ppm. STEL 15 minutes: 50 ppm. STEL 15 minutes: 332 mg/m ³ . TWA 8 hours: 133 mg/m ³ .

Biological exposure indices

No exposure indices known.

Recommended monitoring procedures : Reference should be made to monitoring standards, such as the following: British Standard BS EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) British Standard BS EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) British Standard BS EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

Product/ingredient name	Result
silver massive	DNEL - General population - Long term - Inhalation 0.0023 mg/m ³ <u>Effects:</u> Systemic DNEL - Workers - Long term - Inhalation 0.0076 mg/m ³ <u>Effects:</u> Systemic DNEL - General population - Long term - Oral 0.11 mg/kg bw/day <u>Effects:</u> Systemic DNEL - General population - Long term - Inhalation 0.0023 mg/m ³ <u>Effects:</u> Local DNEL - Workers - Long term - Inhalation 0.0076 mg/m ³ <u>Effects:</u> Local
2-methoxy-1-methylethyl acetate	DNEL - General population - Long term - Inhalation 33 mg/m ³ <u>Effects:</u> Local DNEL - General population - Long term - Inhalation

SECTION 8: Exposure controls/personal protection

	33 mg/m³ <u>Effects:</u> Systemic
	DNEL - General population - Long term - Oral 36 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Inhalation 275 mg/m³ <u>Effects:</u> Systemic
	DNEL - General population - Long term - Dermal 320 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Short term - Inhalation 550 mg/m³ <u>Effects:</u> Local
	DNEL - Workers - Long term - Dermal 796 mg/kg bw/day <u>Effects:</u> Systemic
n-butyl acetate	DNEL - General population - Long term - Oral 2 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Short term - Oral 2 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Long term - Dermal 3.4 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Short term - Dermal 6 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Dermal 7 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Short term - Dermal 11 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Long term - Inhalation 12 mg/m³ <u>Effects:</u> Systemic
	DNEL - General population - Long term - Inhalation 35.7 mg/m³ <u>Effects:</u> Local
	DNEL - Workers - Long term - Inhalation 48 mg/m³ <u>Effects:</u> Systemic
	DNEL - General population - Short term - Inhalation 300 mg/m³ <u>Effects:</u> Local
	DNEL - General population - Short term - Inhalation 300 mg/m³ <u>Effects:</u> Systemic

SECTION 8: Exposure controls/personal protection

2-butoxyethyl acetate	DNEL - Workers - Long term - Inhalation 300 mg/m³ <u>Effects:</u> Local
	DNEL - Workers - Short term - Inhalation 600 mg/m³ <u>Effects:</u> Local
	DNEL - Workers - Short term - Inhalation 600 mg/m³ <u>Effects:</u> Systemic
	DNEL - General population - Long term - Oral 8.6 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Short term - Oral 36 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Short term - Dermal 72 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Long term - Inhalation 80 mg/m³ <u>Effects:</u> Systemic
	DNEL - General population - Long term - Dermal 102 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Short term - Dermal 120 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Inhalation 133 mg/m³ <u>Effects:</u> Systemic
	DNEL - Workers - Long term - Dermal 169 mg/kg bw/day <u>Effects:</u> Systemic
	DNEL - General population - Short term - Inhalation 200 mg/m³ <u>Effects:</u> Local

DNEL - Workers - Short term - Inhalation 333 mg/m³ <u>Effects:</u> Local

PNECs
Not available.

8.2 Exposure controls

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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
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SECTION 8: Exposure controls/personal protection**Individual protection measures**

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
- 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. Refer to British Standard BS EN 1149 for further information on material and design requirements and test methods.
- 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.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

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

9.1 Information on basic physical and chemical properties**Appearance**

- Physical state** : Liquid.
- Colour** : Silver.
- Odour** : Not available.
- Odour threshold** : Not available.
- Melting point/freezing point** : Not available.
- Initial boiling point and boiling range** : Not available.
- Flammability (solid, gas)** : Not available.
- Upper/lower flammability or explosive limits** : Not available.
- Flash point** : Closed cup: 14°C (57.2°F) [Tagliabue]
- Auto-ignition temperature** :

SECTION 9: Physical and chemical properties

Ingredient name	°C	°F	Method
2-methoxy-1-methylethyl acetate	333	631.4	DIN 51794
2-butoxyethyl acetate	340	644	
n-butyl acetate	415	779	EU A.15

Decomposition temperature : Not available.

pH : Not available.

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

Solubility in water : Not available.

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

Vapour pressure :

Ingredient name	Vapour Pressure at 20°C			Vapour pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
n-butyl acetate	11.25096	1.5	DIN EN 13016-2			
2-methoxy-1-methylethyl acetate	2.7	0.36	OECD 104			
2-butoxyethyl acetate	0.23	0.031				

Evaporation rate : Not available.

Relative density : Not available.

Vapour density : >1 [Air = 1]

Explosive properties : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat, shocks and mechanical impacts, oxidising materials, reducing materials, combustible materials, organic materials, metals, acids, alkalis and moisture.

Oxidising properties : Not available.

Particle characteristics

Median particle size : Not applicable.

9.2 Other information

Not available.

SECTION 10: Stability and reactivity

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

10.2 Chemical stability : The product is stable.

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

10.4 Conditions to avoid : 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. Do not allow vapour to accumulate in low or confined areas.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
oxidising materials

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity****Product/ingredient name**

2-methoxy-1-methylethyl acetate

Result**Rat - Oral - LD50**

8532 mg/kg

Rabbit - Dermal - LD50

>5 g/kg

n-butyl acetate

Rabbit - Dermal - LD50

>17600 mg/kg

Rat - Oral - LD50

10768 mg/kg

Toxic effects: Behavioral - Somnolence (general depressed activity) Lung, Thorax, or Respiration - Other changes Liver - Other changes

2-butoxyethyl acetate

Rabbit - Dermal - LD50

1500 mg/kg

Toxic effects: Kidney, Ureter, and Bladder - Hematuria Kidney, Ureter, and Bladder - Other changes in urine composition Blood - Normocytic anemia**Rat - Oral - LD50**

2400 mg/kg

Toxic effects: Kidney, Ureter, and Bladder - Hematuria Kidney, Ureter, and Bladder - Other changes in urine composition**Conclusion/Summary [Product]** : Not available.**Acute toxicity estimates**

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapours) (mg/l)	Inhalation (dusts and mists) (mg/l)
2-methoxy-1-methylethyl acetate	8532	N/A	N/A	N/A	N/A
n-butyl acetate	10768	N/A	390	N/A	N/A
2-butoxyethyl acetate	2400	1500	N/A	11	N/A

Skin corrosion/irritation**Product/ingredient name**

n-butyl acetate

Result**Rabbit - Skin - Moderate irritant**Duration of treatment/exposure: 24 hoursAmount/concentration applied: 500 mg

2-butoxyethyl acetate

Rabbit - Skin - Mild irritantAmount/concentration applied: 500 mg**Conclusion/Summary [Product]** : Not available.**Serious eye damage/eye irritation****Product/ingredient name**

n-butyl acetate

Result**Rabbit - Eyes - Moderate irritant**Amount/concentration applied: 100 mg

2-butoxyethyl acetate

Rabbit - Eyes - Mild irritantDuration of treatment/exposure: 24 hoursAmount/concentration applied: 500 mg

SECTION 11: Toxicological information

Conclusion/Summary [Product] : Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] : Not available.

Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary [Product] : Not available.

Respiratory

Conclusion/Summary [Product] : Not available.

Germ cell mutagenicity

Not available.

Conclusion/Summary [Product] : Not available.

Carcinogenicity

Not available.

Conclusion/Summary [Product] : Not available.

Reproductive toxicity

Not available.

Conclusion/Summary [Product] : Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Result
n-butyl acetate	STOT SE 3, H336 (Narcotic effects)

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Result
silver massive	STOT RE 2, H373 (nervous system)

Aspiration hazard

Not available.

Information on likely routes of exposure

Not available.

Potential acute health effects

Eye contact	: May cause eye irritation.
Inhalation	: No known significant effects or critical hazards.
Skin contact	: May cause skin irritation.
Ingestion	: Do not ingest. If swallowed then seek immediate medical assistance.

SECTION 11: Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: Adverse symptoms may include the following: irritation redness watering
Inhalation	: Adverse symptoms may include the following: nausea or vomiting headache dizziness/vertigo drowsiness/fatigue unconsciousness
Skin contact	: Adverse symptoms may include the following: irritation redness
Ingestion	: Adverse symptoms may include the following: Ingestion Seek medical attention.

Delayed and immediate effects as well as 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

Not available.

Conclusion/Summary [Product] : Not available.

General	: May cause damage to organs through prolonged or repeated exposure.
Carcinogenicity	: No known significant effects or critical hazards.
Mutagenicity	: No known significant effects or critical hazards.
Reproductive toxicity	: Suspected of damaging fertility.

Other information

Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name

silver massive

Result

Acute - LC50 - Fresh water

Fish - Fathead minnow - *Pimephales promelas*

Age: <24 hours

2.13 µg/l [96 hours]

Effect: Mortality

Acute - EC50 - Fresh water

Daphnia - Water flea - *Daphnia magna*

0.24 µg/l [48 hours]

Effect: Mortality

Chronic - NOEC - Marine water

Algae - Dinoflagellate - *Glenodinium halli*

5 mg/l [72 hours]

Effect: Population

SECTION 12: Ecological information**Acute - EC50 - Marine water**Algae - Cryptomonad - *Chroomonas* sp.

1.4 µg/l [4 days]

Effect: Population

n-butyl acetate

Acute - LC50 - Fresh waterFish - Fathead minnow - *Pimephales promelas*Age: 31 to 32 days; Size: 21.6 mm; Weight: 0.175 g

18 mg/l [96 hours]

Effect: Mortality**Acute - LC50 - Marine water**Crustaceans - Brine shrimp - *Artemia salina*

32 mg/l [48 hours]

Effect: Mortality**Conclusion/Summary [Product]** : Not available.**12.2 Persistence and degradability**

Not available.

Conclusion/Summary [Product] : Not available.**12.3 Bioaccumulative potential**

Product/ingredient name	LogP _{ow}	BCF	Potential
silver massive	-	70	Low
2-methoxy-1-methylethyl acetate	1.2	-	Low
n-butyl acetate	2.3	-	Low
2-butoxyethyl acetate	1.51	-	Low

12.4 Mobility in soil**Soil/water partition coefficient** : Not available.**Mobility** : Not available.**12.5 Results of PBT and vPvB assessment**

Product/ingredient name	PBT	P	B	T	vPvB	vP	vB
silver massive	No	No	No	No	No	No	No
2-methoxy-1-methylethyl acetate	No	N/A	N/A	No	N/A	N/A	N/A
n-butyl acetate	No	N/A	N/A	No	N/A	N/A	N/A
2-butoxyethyl acetate	No	N/A	N/A	No	N/A	N/A	N/A

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

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

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.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : 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. Vapour 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	ADN	IMDG	IATA
14.1 UN number	UN1263	UN1263	UN1263	UN1263
14.2 UN proper shipping name	PAINT	PAINT	PAINT	PAINT
14.3 Transport hazard class(es)	3 	3 	3 	3 
14.4 Packing group	II	II	II	II
14.5 Environmental hazards	Yes.	Yes.	Yes.	Yes. The environmentally hazardous substance mark is not required.

Additional information

ADR/RID : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

Special provisions 640 (C)

Tunnel code (D/E)

ADN : The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

Special provisions 640 (C)

IMDG : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.

IATA : The environmentally hazardous substance mark may appear if required by other transportation regulations.

14.6 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 14: Transport information

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

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****UK (GB)/REACH****Annex XIV - List of substances subject to authorisation****Annex XIV**

None of the components are listed above the relevant limit.

Substances of very high concern

None of the components are listed above the relevant limit.

Ozone depleting substances

Not listed.

Prior Informed Consent (PIC)

Not listed.

Persistent Organic Pollutants

Not listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Product/ingredient name	%	Designation [Usage]
CircuitWorks Conductive Pen (UFI)	≥90	3

Labelling : Not applicable.

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category
P5a
E1

EU regulations

Industrial emissions (integrated pollution prevention and control) - Air : Listed

Industrial emissions (integrated pollution prevention and control) - Water : 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.

SECTION 15: Regulatory information**UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

Inventory list

Australia	: All components are listed or exempted.
Canada	: All components are listed or exempted.
Chile	: Not determined.
China	: All components are listed or exempted.
Colombia	: Not determined.
Eurasian Economic Union	: Russian Federation inventory : All components are listed or exempted.
Japan	: Japan inventory (CSCL) : Not determined. Japan inventory (ISHL) : Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: All components are listed or exempted.
Turkey	: All components are listed or exempted.
United States	: All components are active or exempted.
Viet Nam	: All components are listed or exempted.

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms :

- ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
- ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road
- ATE = Acute Toxicity Estimate
- GB CLP = UK CLP (EC No 1272/2008) on the Classification, Labelling and Packaging of Substances and Mixtures as amended by (EU Exit) Regulations 2019 No. 720 and amendments
- DMEL = Derived Minimal Effect Level
- DNEL = Derived No Effect Level
- EUH statement = GB CLP-specific Hazard statement
- IATA = International Air Transport Association
- IMDG = International Maritime Dangerous Goods
- IMO = International Maritime Organization
- N/A = Not available
- PBT = Persistent, Bioaccumulative and Toxic
- PNEC = Predicted No Effect Concentration
- RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail
- RRN = REACH Registration Number
- SGG = Segregation Group
- vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification

Classification	Justification
Flam. Liq. 1, H224	On basis of test data
Repr. 2, H361f	Calculation method
STOT RE 2, H373	Calculation method
Aquatic Acute 1, H400	Calculation method
Aquatic Chronic 1, H410	Calculation method

Full text of abbreviated H statements

SECTION 16: Other information

H224	Extremely flammable liquid and vapour.
H226	Flammable liquid and vapour.
H312	Harmful in contact with skin.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H361f	Suspected of damaging fertility.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.

Full text of classifications

Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Acute 1	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
Aquatic Chronic 1	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1
Aquatic Chronic 3	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
Eye Irrit. 2	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Flam. Liq. 1	FLAMMABLE LIQUIDS - Category 1
Flam. Liq. 3	FLAMMABLE LIQUIDS - Category 3
Repr. 2	REPRODUCTIVE TOXICITY - Category 2
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE - Category 3

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Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.