

# Safety Data Sheet

acc. to OSHA HCS

Printing date 06/01/2022

Reviewed on 06/01/2022

## 1 Identification

- **Product identifier**
- **Trade name:** Conductive Silver Pen
- **Article number:** 12644-01, 12644-02
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkcck@aol.com  
www.emsdiasum.com
- **Information department:** Product safety department
- **Emergency telephone number:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flammable Liquids 3

H226 Flammable liquid and vapor.



GHS08 Health hazard

Carcinogenicity 1A

H350 May cause cancer.

Toxic to Reproduction 2

H361 Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Repeated Exposure 2 H373 May cause damage to organs through prolonged or repeated exposure.

Aspiration Hazard 1

H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irritation 2

H315 Causes skin irritation.

Specific Target Organ Toxicity - Single Exposure 3

H336 May cause drowsiness or dizziness.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS02



GHS07



GHS08

- **Signal word** Danger

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**Trade name: Conductive Silver Pen**

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· **Hazard-determining components of labeling:**

*toluene*

*Ethyl alcohol*

*n-butyl acetate*

*Acetone, Reagent Grade*

· **Hazard statements**

*Flammable liquid and vapor.*

*Causes skin irritation.*

*May cause cancer.*

*Suspected of damaging fertility or the unborn child.*

*May cause drowsiness or dizziness.*

*May cause damage to organs through prolonged or repeated exposure.*

*May be fatal if swallowed and enters airways.*

· **Precautionary statements**

*Obtain special instructions before use.*

*Do not handle until all safety precautions have been read and understood.*

*Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*

*Ground/bond container and receiving equipment.*

*Use explosion-proof electrical/ventilating/lighting/equipment.*

*Use only non-sparking tools.*

*Take precautionary measures against static discharge.*

*Do not breathe dust/fume/gas/mist/vapors/spray.*

*Wash thoroughly after handling.*

*Use only outdoors or in a well-ventilated area.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*If swallowed: Immediately call a poison center/doctor.*

*Specific treatment (see on this label).*

*Do NOT induce vomiting.*

*If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*

*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

*IF exposed or concerned: Get medical advice/attention.*

*Call a poison center/doctor if you feel unwell.*

*Get medical advice/attention if you feel unwell.*

*Take off contaminated clothing and wash it before reuse.*

*If skin irritation occurs: Get medical advice/attention.*

*In case of fire: Use CO<sub>2</sub>, powder or water spray to extinguish.*

*Store in a well-ventilated place. Keep container tightly closed.*

*Store in a well-ventilated place. Keep cool.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



*Health = 1*

*Fire = 3*

*Reactivity = 0*

· **HMIS-ratings (scale 0 - 4)**



*Health = \*1*

*Fire = 3*

*Reactivity = 0*

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- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**

108-88-3	toluene	>10-≤25%
123-86-4	n-butyl acetate	>2.5-≤10%
67-64-1	Acetone, Reagent Grade	>2.5-≤10%
64-17-5	Ethyl alcohol	≤2.5%
110-19-0	isobutyl acetate	≤2.5%
110-43-0	heptan-2-one	≤2.5%
141-78-6	ethyl acetate	≤2.5%

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.

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- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

7440-22-4	silver	0.3 mg/m <sup>3</sup>
108-88-3	toluene	67 ppm
123-86-4	n-butyl acetate	5 ppm
67-64-1	Acetone, Reagent Grade	200 ppm
64-17-5	Ethyl alcohol	1,800 ppm
110-19-0	isobutyl acetate	450 ppm
110-43-0	heptan-2-one	150 ppm
141-78-6	ethyl acetate	1,200 ppm
108-65-6	2-methoxy-1-methylethyl acetate	50 ppm

· **PAC-2:**

7440-22-4	silver	170 mg/m <sup>3</sup>
108-88-3	toluene	560 ppm
123-86-4	n-butyl acetate	200 ppm
67-64-1	Acetone, Reagent Grade	3200* ppm
64-17-5	Ethyl alcohol	3300* ppm
110-19-0	isobutyl acetate	1300* ppm
110-43-0	heptan-2-one	670 ppm
141-78-6	ethyl acetate	1,700 ppm
108-65-6	2-methoxy-1-methylethyl acetate	1,000 ppm

· **PAC-3:**

7440-22-4	silver	990 mg/m <sup>3</sup>
108-88-3	toluene	3700* ppm
123-86-4	n-butyl acetate	3000* ppm
67-64-1	Acetone, Reagent Grade	5700* ppm
64-17-5	Ethyl alcohol	15000* ppm
110-19-0	isobutyl acetate	7500** ppm
110-43-0	heptan-2-one	4000* ppm
141-78-6	ethyl acetate	10000** ppm
108-65-6	2-methoxy-1-methylethyl acetate	5000* ppm

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## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:**  
Keep ignition sources away - Do not smoke.  
Protect from heat.  
Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Keep receptacle tightly sealed.  
Protect from heat and direct sunlight.
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

### 108-88-3 toluene

PEL	Long-term value: 200 ppm Ceiling limit value: 300; 500* ppm *10-min peak per 8-hr shift
REL	Short-term value: 560 mg/m <sup>3</sup> , 150 ppm Long-term value: 375 mg/m <sup>3</sup> , 100 ppm
TLV	Long-term value: 20 ppm BEI, OTO, A4

### 123-86-4 n-butyl acetate

PEL	Long-term value: 710 mg/m <sup>3</sup> , 150 ppm
REL	Short-term value: 950 mg/m <sup>3</sup> , 200 ppm Long-term value: 710 mg/m <sup>3</sup> , 150 ppm
TLV	Short-term value: 150 ppm Long-term value: 50 ppm

### 67-64-1 Acetone, Reagent Grade

PEL	Long-term value: 2400 mg/m <sup>3</sup> , 1000 ppm
REL	Long-term value: 590 mg/m <sup>3</sup> , 250 ppm
TLV	Short-term value: 500 ppm Long-term value: 250 ppm A4, BEI

### 64-17-5 Ethyl alcohol

PEL	Long-term value: 1900 mg/m <sup>3</sup> , 1000 ppm
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REL Long-term value: 1900 mg/m<sup>3</sup>, 1000 ppm  
 TLV Short-term value: 1000 ppm  
 A3

**110-19-0 isobutyl acetate**

PEL Long-term value: 700 mg/m<sup>3</sup>, 150 ppm  
 REL Long-term value: 700 mg/m<sup>3</sup>, 150 ppm  
 TLV Short-term value: 150 ppm  
 Long-term value: 50 ppm

**110-43-0 heptan-2-one**

PEL Long-term value: 465 mg/m<sup>3</sup>, 100 ppm  
 REL Long-term value: 465 mg/m<sup>3</sup>, 100 ppm  
 TLV Long-term value: 50 ppm

**141-78-6 ethyl acetate**

PEL Long-term value: 1400 mg/m<sup>3</sup>, 400 ppm  
 REL Long-term value: 1400 mg/m<sup>3</sup>, 400 ppm  
 TLV Long-term value: 400 ppm

**· Ingredients with biological limit values:**

**108-88-3 toluene**

BEI 0.02 mg/L  
 Medium: blood  
 Time: prior to last shift of workweek  
 Parameter: Toluene

0.03 mg/L  
 Medium: urine  
 Time: end of shift  
 Parameter: Toluene

0.3 mg/g creatinine  
 Medium: urine  
 Time: end of shift  
 Parameter: o-Cresol with hydrolysis (background)

**67-64-1 Acetone, Reagent Grade**

BEI 25 mg/L  
 Medium: urine  
 Time: end of shift  
 Parameter: Acetone (nonspecific)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.  
 Immediately remove all soiled and contaminated clothing.  
 Wash hands before breaks and at the end of work.  
 Avoid contact with the skin.  
 Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

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· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

<b>Form:</b>	Liquid
<b>Color:</b>	Grey
<b>Odor:</b>	Sweetish
<b>Odor threshold:</b>	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	126 °C (258.8 °F)

· **Flash point:** 24 °C (75.2 °F)

· **Flammability (solid, gaseous):** Not flammable.

· **Ignition temperature:** 370 °C (698 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits:**

<b>Lower:</b>	1.2 Vol %
<b>Upper:</b>	7 Vol %

· **Vapor pressure at 20 °C (68 °F):** 6.7 hPa (5 mm Hg)

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- |   |  |
|---|--|
| · <b>Density at 20 °C (68 °F):</b>                | 2 g/cm <sup>3</sup> (16.69 lbs/gal)        |
| · <b>Relative density</b>                         | Not determined.                            |
| · <b>Vapor density</b>                            | Not determined.                            |
| · <b>Evaporation rate</b>                         | Not determined.                            |
| · <b>Solubility in / Miscibility with Water:</b>  | Not miscible or difficult to mix.          |
| · <b>Partition coefficient (n-octanol/water):</b> | Not determined.                            |
| · <b>Viscosity:</b>                               |  |
| <b>Dynamic:</b>                                   | Not determined.                            |
| <b>Kinematic:</b>                                 | Not determined.                            |
| · <b>Solvent content:</b>                         |  |
| <b>Organic solvents:</b>                          | 31.1 %                                     |
| <b>VOC content:</b>                               | 27.10 %                                    |
|   | 603.1 g/l / 5.03 lb/gal                    |
| <b>Solids content:</b>                            | 45.8 %                                     |
| · <b>Other information</b>                        | No further relevant information available. |

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

### 108-88-3 toluene

Oral	LD50	5,000 mg/kg (rat)
Dermal	LD50	12,124 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Harmful  
Irritant

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· **Carcinogenic categories**· **IARC (International Agency for Research on Cancer)**

108-88-3	toluene	3
64-17-5	Ethyl alcohol	1

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety Health Administration)**

None of the ingredients is listed.

## 12 Ecological information

· **Toxicity**· **Aquatic toxicity:** No further relevant information available.· **Persistence and degradability** No further relevant information available.· **Behavior in environmental systems:**· **Bioaccumulative potential** No further relevant information available.· **Mobility in soil** No further relevant information available.· **Additional ecological information:**· **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

· **Results of PBT and vPvB assessment**· **PBT:** Not applicable.· **vPvB:** Not applicable.· **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

· **Waste treatment methods**· **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**· **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

· **UN-Number**· **DOT, ADR, IMDG, IATA**

UNI263

· **UN proper shipping name**· **DOT**

Paint

· **ADR**

1263 PAINT

· **IMDG**

PAINT, MARINE POLLUTANT

· **IATA**

PAINT

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Trade name: *Conductive Silver Pen*

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· **Transport hazard class(es)**· **DOT**

· **Class** 3 *Flammable liquids*  
 · **Label** 3

· **ADR, IMDG**

· **Class** 3 *Flammable liquids*  
 · **Label** 3

· **IATA**

· **Class** 3 *Flammable liquids*  
 · **Label** 3

· **Packing group**· **DOT, ADR, IMDG, IATA** III· **Environmental hazards:**· **Marine pollutant:** Symbol (fish and tree)· **Special marking (ADR):** Symbol (fish and tree)· **Special precautions for user** Warning: *Flammable liquids*· **Hazard identification number (Kemler code):** 30· **EMS Number:** F-E, S-E· **Stowage Category** A· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.· **Transport/Additional information:**· **DOT**

· **Quantity limitations** On passenger aircraft/rail: 60 L  
 On cargo aircraft only: 220 L

· **ADR**

· **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **IMDG**· **Limited quantities (LQ)** 5L

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- |                                   |   |
|-----------------------------------|---|
| <b>· Excepted quantities (EQ)</b> | <i>Code: E1</i><br><i>Maximum net quantity per inner packaging: 30 ml</i><br><i>Maximum net quantity per outer packaging: 1000 ml</i> |
| <b>· UN "Model Regulation":</b>   | <i>UN 1263 PAINT, 3, III</i>  |

## 15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture**  
No further relevant information available.

**· Sara**

- Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

- Section 313 (Specific toxic chemical listings):**

7440-22-4	silver
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108-88-3	toluene
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- TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

- Hazardous Air Pollutants**

108-88-3	toluene
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- Proposition 65**

- Chemicals known to cause cancer:**

None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

- Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

- Chemicals known to cause developmental toxicity:**

108-88-3	toluene
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64-17-5	Ethyl alcohol
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- Carcinogenic categories**

- EPA (Environmental Protection Agency)**

7440-22-4	silver	D
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108-88-3	toluene	II
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67-64-1	Acetone, Reagent Grade	I
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- TLV (Threshold Limit Value)**

108-88-3	toluene	A4
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67-64-1	Acetone, Reagent Grade	A4
---------	------------------------	----

64-17-5	Ethyl alcohol	A3
---------	---------------	----

- NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

- GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

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· **Hazard pictograms**

GHS02

GHS07

GHS08

· **Signal word** *Danger*· **Hazard-determining components of labeling:***toluene**Ethyl alcohol**n-butyl acetate**Acetone, Reagent Grade*· **Hazard statements***Flammable liquid and vapor.**Causes skin irritation.**May cause cancer.**Suspected of damaging fertility or the unborn child.**May cause drowsiness or dizziness.**May cause damage to organs through prolonged or repeated exposure.**May be fatal if swallowed and enters airways.*· **Precautionary statements***Obtain special instructions before use.**Do not handle until all safety precautions have been read and understood.**Keep away from heat/sparks/open flames/hot surfaces. - No smoking.**Ground/bond container and receiving equipment.**Use explosion-proof electrical/ventilating/lighting/equipment.**Use only non-sparking tools.**Take precautionary measures against static discharge.**Do not breathe dust/fume/gas/mist/vapors/spray.**Wash thoroughly after handling.**Use only outdoors or in a well-ventilated area.**Wear protective gloves/protective clothing/eye protection/face protection.**If swallowed: Immediately call a poison center/doctor.**Specific treatment (see on this label).**Do NOT induce vomiting.**If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.**IF INHALED: Remove person to fresh air and keep comfortable for breathing.**IF exposed or concerned: Get medical advice/attention.**Call a poison center/doctor if you feel unwell.**Get medical advice/attention if you feel unwell.**Take off contaminated clothing and wash it before reuse.**If skin irritation occurs: Get medical advice/attention.**In case of fire: Use CO<sub>2</sub>, powder or water spray to extinguish.**Store in a well-ventilated place. Keep container tightly closed.**Store in a well-ventilated place. Keep cool.**Store locked up.**Dispose of contents/container in accordance with local/regional/national/international regulations.*· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

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### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Contact:**

· **Date of preparation / last revision** 06/01/2022 / -

· **Abbreviations and acronyms:**

*ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*DOT: US Department of Transportation*

*IATA: International Air Transport Association*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*VOC: Volatile Organic Compounds (USA, EU)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*

*PBT: Persistent, Bioaccumulative and Toxic*

*vPvB: very Persistent and very Bioaccumulative*

*NIOSH: National Institute for Occupational Safety*

*OSHA: Occupational Safety **Health***

**TLV: Threshold Limit Value**

**PEL: Permissible Exposure Limit**

**REL: Recommended Exposure Limit**

**BEI: Biological Exposure Limit**

**Flammable Liquids 3: Flammable liquids – Category 3**

**Skin Irritation 2: Skin corrosion/irritation – Category 2**

**Carcinogenicity 1A: Carcinogenicity – Category 1A**

**Toxic to Reproduction 2: Reproductive toxicity – Category 2**

**Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3**

**Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2**

**Aspiration Hazard 1: Aspiration hazard – Category 1**

# Safety Data Sheet

## according to WHS Regulations

Printing date 01.06.2022

Revision: 01.06.2022

### 1 Identification

· **Product identifier**

· **Trade name:** Conductive Silver Pen

· **Article number:** 12644-01, 12644-02

· **Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.

· **Application of the substance / the mixture** Laboratory chemicals

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**

Electron Microscopy Sciences

1560 Industry Road

USA-Hatfield, PA 19440

Tel: 215-412-8400 Fax: 215-412-8450

email: [sgkcck@aol.com](mailto:sgkcck@aol.com)

[www.emsdiasum.com](http://www.emsdiasum.com)

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Telephone Number: (07) 4773 9444 - 8:30am - 5:00pm, Monday to Friday (excluding Public Holidays)

Emergency Contact: (07) 4773 9444 - 8:30am - 5:00pm, Monday to Friday (excluding Public Holidays)

Website: [ems.proscitech.com](http://ems.proscitech.com)

Emgrid Australia Pty. Ltd.

P.O. Box 118

The Patch VIC 3792

Australia

Tel: 03 9752 1785

Fax: 03 9752 1784

Website: [www.emgrid.com.au](http://www.emgrid.com.au)

· **Further information obtainable from:** Product safety department

· **Emergency telephone number:**

ChemTrec 1-800-424-9300 Contract CCN7661

1-703-527-3887

### 2 Hazard(s) Identification

· **Classification of the substance or mixture**



GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



GHS08 health hazard

Carc. 1A H350 May cause cancer.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

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## Safety Data Sheet according to WHS Regulations

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Trade name: **Conductive Silver Pen**

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*Skin Irrit. 2 H315 Causes skin irritation.*

*STOT SE 3 H336 May cause drowsiness or dizziness.*

· **Label elements**

· **GHS label elements** The product is classified and labelled according to the Globally Harmonised System (GHS).

· **Hazard pictograms**



GHS02    GHS07    GHS08

· **Signal word** *Danger*

· **Hazard-determining components of labelling:**

*toluene*

*Ethyl alcohol*

*n-butyl acetate*

*Acetone, Reagent Grade*

· **Hazard statements**

*Flammable liquid and vapour.*

*Causes skin irritation.*

*May cause cancer.*

*Suspected of damaging fertility or the unborn child.*

*May cause drowsiness or dizziness.*

*May cause damage to organs through prolonged or repeated exposure.*

*May be fatal if swallowed and enters airways.*

· **Precautionary statements**

*Obtain special instructions before use.*

*Do not handle until all safety precautions have been read and understood.*

*Keep away from heat/sparks/open flames/hot surfaces. No smoking.*

*Ground/bond container and receiving equipment.*

*Use explosion-proof electrical/ventilating/lighting equipment.*

*Use only non-sparking tools.*

*Take precautionary measures against static discharge.*

*Do not breathe dust/fume/gas/mist/vapours/spray.*

*Wash thoroughly after handling.*

*Use only outdoors or in a well-ventilated area.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*

*Specific treatment (see on this label).*

*Do NOT induce vomiting.*

*IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.*

*IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.*

*IF exposed or concerned: Get medical advice/attention.*

*Call a POISON CENTER/doctor if you feel unwell.*

*Get medical advice/attention if you feel unwell.*

*Take off contaminated clothing and wash it before reuse.*

*If skin irritation occurs: Get medical advice/attention.*

*In case of fire: Use CO2, powder or water spray for extinction.*

*Store in a well-ventilated place. Keep container tightly closed.*

*Store in a well-ventilated place. Keep cool.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

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# Safety Data Sheet

## according to WHS Regulations

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Trade name: **Conductive Silver Pen**

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- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition and Information on Ingredients

- **Chemical characterisation: Mixtures**
- **Description:** Mixture of substances listed below with nonhazardous additions.

- **Dangerous components:**

108-88-3	toluene	>10-≤25%
123-86-4	n-butyl acetate	>2.5-≤10%
67-64-1	Acetone, Reagent Grade	>2.5-≤10%
64-17-5	Ethyl alcohol	≤2.5%
110-19-0	isobutyl acetate	≤2.5%
110-43-0	heptan-2-one	≤2.5%
141-78-6	ethyl acetate	≤2.5%

- **SVHC**

67-64-1	Acetone, Reagent Grade
64-17-5	Ethyl alcohol

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### 4 First Aid Measures

- **Description of first aid measures**
- **General information:**  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire Fighting Measures

- **Extinguishing media**
- **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** No further relevant information available.

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- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

### 7 Handling and Storage

- **Handling:**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about fire - and explosion protection:**  
Keep ignition sources away - Do not smoke.  
Protect from heat.  
Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Keep container tightly sealed.  
Protect from heat and direct sunlight.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls and personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

#### 108-88-3 toluene

WES	Short-term value: 574 mg/m <sup>3</sup> , 150 ppm
	Long-term value: 191 mg/m <sup>3</sup> , 50 ppm
	Sk

#### 123-86-4 n-butyl acetate

WES	Short-term value: 950 mg/m <sup>3</sup> , 200 ppm
	Long-term value: 713 mg/m <sup>3</sup> , 150 ppm

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<b>67-64-1 Acetone, Reagent Grade</b>	
WES	Short-term value: 2375 mg/m <sup>3</sup> , 1000 ppm Long-term value: 1185 mg/m <sup>3</sup> , 500 ppm
<b>64-17-5 Ethyl alcohol</b>	
WES	Long-term value: 1880 mg/m <sup>3</sup> , 1000 ppm
<b>110-19-0 isobutyl acetate</b>	
WES	Long-term value: 713 mg/m <sup>3</sup> , 150 ppm
<b>110-43-0 heptan-2-one</b>	
WES	Long-term value: 233 mg/m <sup>3</sup> , 50 ppm
<b>141-78-6 ethyl acetate</b>	
WES	Short-term value: 1440 mg/m <sup>3</sup> , 400 ppm Long-term value: 720 mg/m <sup>3</sup> , 200 ppm

· **Additional information:** The lists valid during the making were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the skin.

Avoid contact with the eyes and skin.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

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Trade name: *Conductive Silver Pen*

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### 9 Physical and Chemical Properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· <b>Form:</b>	Liquid
· <b>Colour:</b>	Grey
· <b>Odour:</b>	Sweetish
· <b>Odour threshold:</b>	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

· <b>Melting point/freezing point:</b>	Undetermined.
· <b>Initial boiling point and boiling range:</b>	126 °C

· **Flash point:** 24 °C

· **Flammability (solid, gas):** Not applicable.

· **Ignition temperature:** 370 °C

· **Decomposition temperature:** Not determined.

· **Auto-ignition temperature:** Product is not selfigniting.

· **Explosive properties:** Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

· **Explosion limits:**

· <b>Lower:</b>	1.2 Vol %
· <b>Upper:</b>	7 Vol %

· **Vapour pressure at 20 °C:** 6.7 hPa

· <b>Density at 20 °C:</b>	2 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.

· **Solubility in / Miscibility with water:**

Not miscible or difficult to mix.

· **Partition coefficient: n-octanol/water:** Not determined.

· **Viscosity:**

· <b>Dynamic:</b>	Not determined.
· <b>Kinematic:</b>	Not determined.

· **Solvent content:**

· <b>Organic solvents:</b>	31.1 %
· <b>VOC (EC)</b>	31.10 %

· **Solids content:** 45.8 %

· **Other information** No further relevant information available.

### 10 Stability and Reactivity

· **Reactivity** No further relevant information available.

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Trade name: **Conductive Silver Pen**

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- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

### 11 Toxicological Information

- **Information on toxicological effects**

- **Acute toxicity**

- **LD/LC50 values relevant for classification:**

#### 108-88-3 toluene

Oral	LD50	5,000 mg/kg (rat)
Dermal	LD50	12,124 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)

- **Primary irritant effect:**

- **Skin corrosion/irritation** Irritant to skin and mucous membranes.

- **Serious eye damage/irritation** No irritating effect.

- **Respiratory or skin sensitisation** No sensitising effects known.

- **Additional toxicological information:**

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:

Harmful

Irritant

- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**

Carc. 1A, Repr. 2

### 12 Ecological Information

- **Toxicity**

- **Aquatic toxicity:** No further relevant information available.

- **Persistence and degradability** No further relevant information available.

- **Behaviour in environmental systems:**

- **Bioaccumulative potential** No further relevant information available.

- **Mobility in soil** No further relevant information available.

- **Additional ecological information:**

- **General notes:**

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

- **Other adverse effects** No further relevant information available.

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Trade name: *Conductive Silver Pen*

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## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

<ul style="list-style-type: none"> <li>· <b>UN-Number</b></li> <li>· <b>ADG, IMDG, IATA</b></li> </ul>	UNI263
<ul style="list-style-type: none"> <li>· <b>UN proper shipping name</b></li> <li>· <b>ADG</b></li> <li>· <b>IMDG</b></li> <li>· <b>IATA</b></li> </ul>	1263 PAINT PAINT, MARINE POLLUTANT PAINT
<ul style="list-style-type: none"> <li>· <b>Transport hazard class(es)</b></li> <li>· <b>ADG, IMDG</b></li> </ul>	<div style="display: flex; align-items: center; gap: 10px;">   </div>
<ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>	3 Flammable liquids. 3
<ul style="list-style-type: none"> <li>· <b>IATA</b></li> </ul>	<div style="display: flex; align-items: center; gap: 10px;">  </div>
<ul style="list-style-type: none"> <li>· <b>Class</b></li> <li>· <b>Label</b></li> </ul>	3 Flammable liquids. 3
<ul style="list-style-type: none"> <li>· <b>Packing group</b></li> <li>· <b>ADG, IMDG, IATA</b></li> </ul>	III
<ul style="list-style-type: none"> <li>· <b>Environmental hazards:</b></li> <li>· <b>Marine pollutant:</b></li> <li>· <b>Special marking (ADG):</b></li> </ul>	Symbol (fish and tree) Symbol (fish and tree)
<ul style="list-style-type: none"> <li>· <b>Special precautions for user</b></li> <li>· <b>Hazard identification number (Kemler code):</b></li> <li>· <b>EMS Number:</b></li> <li>· <b>Stowage Category</b></li> </ul>	Warning: Flammable liquids. 30 F-E, S-E A
<ul style="list-style-type: none"> <li>· <b>Transport in bulk according to Annex II of Marpol and the IBC Code</b></li> </ul>	Not applicable.

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# Safety Data Sheet

according to WHS Regulations

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Trade name: **Conductive Silver Pen**

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· **Transport/Additional information:**

· **ADG**  
 · **Limited quantities (LQ)** 5L  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **Transport category** 3  
 · **Tunnel restriction code** D/E

· **IMDG**  
 · **Limited quantities (LQ)** 5L  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **UN "Model Regulation":** UN 1263 PAINT, 3, III

## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

· **Australian Inventory of Industrial Chemicals**

All ingredients are listed.

· **Standard for the Uniform Scheduling of Medicines and Poisons**

7440-22-4	silver	S2
108-88-3	toluene	S6
67-64-1	Acetone, Reagent Grade	S5

· **Australia: Priority Existing Chemicals**

None of the ingredients is listed.

· **GHS label elements** The product is classified and labelled according to the Globally Harmonised System (GHS).

· **Hazard pictograms**



GHS02    GHS07    GHS08

· **Signal word** Danger

· **Hazard-determining components of labelling:**

toluene

Ethyl alcohol

n-butyl acetate

Acetone, Reagent Grade

· **Hazard statements**

Flammable liquid and vapour.

Causes skin irritation.

May cause cancer.

Suspected of damaging fertility or the unborn child.

May cause drowsiness or dizziness.

May cause damage to organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.

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# Safety Data Sheet

## according to WHS Regulations

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Trade name: **Conductive Silver Pen**

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· **Precautionary statements**

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves/protective clothing/eye protection/face protection.
- IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- Specific treatment (see on this label).
- Do NOT induce vomiting.
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- IF exposed or concerned: Get medical advice/attention.
- Call a POISON CENTER/doctor if you feel unwell.
- Get medical advice/attention if you feel unwell.
- Take off contaminated clothing and wash it before reuse.
- If skin irritation occurs: Get medical advice/attention.
- In case of fire: Use CO<sub>2</sub>, powder or water spray for extinction.
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Directive 2012/18/EU**

- **Named dangerous substances - ANNEX I** None of the ingredients is listed.
- **Seveso category P5c FLAMMABLE LIQUIDS**
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t

· **National regulations:**

· **Other regulations, limitations and prohibitive regulations**

· **Substances of very high concern (SVHC) according to REACH, Article 57**

67-64-1	Acetone, Reagent Grade
64-17-5	Ethyl alcohol

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Contact:**

· **Abbreviations and acronyms:**

- ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)

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**Safety Data Sheet**  
according to WHS Regulations

Printing date 01.06.2022

Revision: 01.06.2022

**Trade name: Conductive Silver Pen**

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*VOC: Volatile Organic Compounds (USA, EU)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**SVHC: Substances of Very High Concern**vPvB: very Persistent and very Bioaccumulative**Flam. Liq. 3: Flammable liquids – Category 3**Skin Irrit. 2: Skin corrosion/irritation – Category 2**Carc. 1A: Carcinogenicity – Category 1A**Repr. 2: Reproductive toxicity – Category 2**STOT SE 3: Specific target organ toxicity (single exposure) – Category 3**STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2**Asp. Tox. 1: Aspiration hazard – Category 1*

AU



# Safety Data Sheet

## according to HPR, Schedule 1

Printing date 06/01/2022

Reviewed on 06/01/2022

### 1 Identification

- **Product identifier**
- **Trade name:** Conductive Silver Pen
- **Article number:** 12644-01, 12644-02
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
 Electron Microscopy Sciences  
 1560 Industry Road  
 USA-Hatfield, PA 19440  
 Tel: 215-412-8400 Fax: 215-412-8450  
 email: sgkcck@aol.com  
 www.emsdiasum.com
- **Information department:** Product safety department
- **Emergency telephone number:**  
 ChemTrec 1-800-424-9300 Contract CCN7661  
 1-703-527-3887

### 2 Hazard identification

- **Classification of the substance or mixture**



GHS02 Flame

Flammable Liquids - Category 3

H226 Flammable liquid and vapour.



GHS08 Health hazard

Carcinogenicity - Category 1A

H350 May cause cancer.

Reproductive Toxicity - Category 2

H361 Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Repeated Exposure - Category 2

H373 May cause damage to organs through prolonged or repeated exposure.

Aspiration Hazard - Category 1

H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irritation - Category 2

H315 Causes skin irritation.

Specific Target Organ Toxicity - Single Exposure - Category 3

H336 May cause drowsiness or dizziness.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02



GHS07



GHS08

(Contd. on page 2)

# Safety Data Sheet

## according to HPR, Schedule 1

Printing date 06/01/2022

Reviewed on 06/01/2022

Trade name: **Conductive Silver Pen**

(Contd. of page 1)

· **Signal word** *Danger*· **Hazard-determining components of labeling:***toluene**Ethyl alcohol**n-butyl acetate**Acetone, Reagent Grade*· **Hazard statements***Flammable liquid and vapour.**Causes skin irritation.**May cause cancer.**Suspected of damaging fertility or the unborn child.**May cause drowsiness or dizziness.**May cause damage to organs through prolonged or repeated exposure.**May be fatal if swallowed and enters airways.*· **Precautionary statements***Obtain special instructions before use.**Do not handle until all safety precautions have been read and understood.**Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.**Ground and bond container and receiving equipment.**Use explosion-proof [electrical/ventilating/lighting] equipment.**Use non-sparking tools.**Take actions to prevent static discharges.**Do not breathe dust/fume/gas/mist/vapours/spray.**Wash thoroughly after handling.**Use only outdoors or in a well-ventilated area.**Wear protective gloves/protective clothing/eye protection/face protection.**If swallowed: Immediately call a poison center/doctor.**Specific treatment (see on this label).**Do NOT induce vomiting.**IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].**IF INHALED: Remove person to fresh air and keep comfortable for breathing.**IF exposed or concerned: Get medical advice/attention.**Call a poison center/doctor if you feel unwell.**Get medical advice/attention if you feel unwell.**Take off contaminated clothing and wash it before reuse.**If skin irritation occurs: Get medical advice/attention.**In case of fire: Use CO<sub>2</sub>, powder or water spray to extinguish.**Store in a well-ventilated place. Keep container tightly closed.**Store in a well-ventilated place. Keep cool.**Store locked up.**Dispose of contents/container in accordance with local/regional/national/international regulations.*· **Classification system:**· **NFPA ratings (scale 0 - 4)***Health = 1**Fire = 3**Reactivity = 0*· **HMIS-ratings (scale 0 - 4)***Health = \*1**Fire = 3**Reactivity = 0*

CA

(Contd. on page 3)

# Safety Data Sheet

## according to HPR, Schedule 1

Printing date 06/01/2022

Reviewed on 06/01/2022

Trade name: **Conductive Silver Pen**

(Contd. of page 2)

### 3 Composition/Information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

108-88-3	toluene	7-13% w/w *
123-86-4	n-butyl acetate	5-10% w/w *
67-64-1	Acetone, Reagent Grade	1-5% w/w *
64-17-5	Ethyl alcohol	1-5% w/w *
110-19-0	isobutyl acetate	1-5% w/w *
110-43-0	heptan-2-one	1-5% w/w *
141-78-6	ethyl acetate	0.1-1% w/w *

\* Actual concentration ranges are withheld as a trade secret.

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**  
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.  
· **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).  
Dispose contaminated material as waste according to item 13.

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# Safety Data Sheet

## according to HPR, Schedule 1

Printing date 06/01/2022

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**Trade name: Conductive Silver Pen**

(Contd. of page 3)

- Ensure adequate ventilation.
- Do not flush with water or aqueous cleansing agents
- **Reference to other sections**
- See Section 7 for information on safe handling.
- See Section 8 for information on personal protection equipment.
- See Section 13 for disposal information.

### 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
- Ensure good ventilation/exhaustion at the workplace.
- Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
- Keep ignition sources away - Do not smoke.
- Protect from heat.
- Protect against electrostatic charges.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
- Keep receptacle tightly sealed.
- Protect from heat and direct sunlight.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/ Personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

#### 108-88-3 toluene

EL TWA: 20 ppm  
R

EV TWA: 20 ppm

#### 123-86-4 n-butyl acetate

EL STEL: 150 ppm  
TWA: 50 ppm

EV STEL: 950 mg/m<sup>3</sup>, 200 ppm  
TWA: 710 mg/m<sup>3</sup>, 150 ppm

#### 67-64-1 Acetone, Reagent Grade

EL STEL: 500 ppm  
TWA: 250 ppm

EV STEL: 750 ppm  
TWA: 500 ppm

#### 64-17-5 Ethyl alcohol

EL STEL: 1000 ppm

EV TWA: 1,900 mg/m<sup>3</sup>, 1,000 ppm

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Trade name: **Conductive Silver Pen**

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**110-19-0 isobutyl acetate**

EL STEL: 150 ppm  
TWA: 50 ppm

EV STEL: 187 ppm  
TWA: 150 ppm

**110-43-0 heptan-2-one**

EL TWA: 50 ppm

EV TWA: 115 mg/m<sup>3</sup>, 25 ppm

**141-78-6 ethyl acetate**

EL TWA: 150 ppm

EV TWA: 1,440 mg/m<sup>3</sup>, 400 ppm

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the skin.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

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## Safety Data Sheet according to HPR, Schedule 1

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Trade name: *Conductive Silver Pen*

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### 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· <b>Form:</b>	Liquid
· <b>Color:</b>	Grey
· <b>Odor:</b>	Sweetish
· <b>Odor threshold:</b>	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

· <b>Melting point/Melting range:</b>	Undetermined.
· <b>Boiling point/Boiling range:</b>	126 °C

· **Flash point:** 24 °C

· **Flammability (solid, gaseous):** Not flammable.

· **Ignition temperature:** 370 °C

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

· **Explosion limits:**

· <b>Lower:</b>	1.2 Vol %
· <b>Upper:</b>	7 Vol %

· **Vapor pressure at 20 °C:** 6.7 hPa

· <b>Density at 20 °C:</b>	2 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.

· **Solubility in / Miscibility with**

· **Water:** Not miscible or difficult to mix.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

· <b>Dynamic:</b>	Not determined.
· <b>Kinematic:</b>	Not determined.

· **Solvent content:**

· **Organic solvents:** 31.1 %

· **Solids content:** 45.8 %

· **Other information** No further relevant information available.

### 10 Stability and reactivity

· **Reactivity** No further relevant information available.

· **Chemical stability**

· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

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## according to HPR, Schedule 1

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Reviewed on 06/01/2022

Trade name: **Conductive Silver Pen**

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- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

### 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

#### 108-88-3 toluene

Oral	LD50	5,000 mg/kg (rat)
Dermal	LD50	12,124 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Harmful  
Irritant

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

108-88-3	toluene	3
64-17-5	Ethyl alcohol	1

- **NTP (National Toxicology Program)**

None of the ingredients is listed.

### 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Water hazard class 1 (Self-assessment): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

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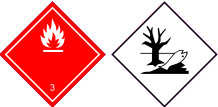

Trade name: *Conductive Silver Pen*

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## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- |  |   |
|--|---|
| <b>· UN-Number</b>                                   |   |
| <b>· DOT/TDG, ADR, IMDG, IATA</b>                    | UNI263  |
| <b>· UN proper shipping name</b>                     |   |
| <b>· DOT/TDG</b>                                     | Paint   |
| <b>· ADR</b>   | 1263 PAINT  |
| <b>· IMDG</b>  | PAINT, MARINE POLLUTANT   |
| <b>· IATA</b>  | PAINT   |
| <b>· Transport hazard class(es)</b>                  |   |
| <b>· DOT/TDG (Transport dangerous goods):</b>        |   |
|  |   |
| <b>· Class</b>                                       | 3 Flammable liquids   |
| <b>· Label</b>                                       | 3   |
| <b>· ADR, IMDG</b>                                   |   |
|  |  |
| <b>· Class</b>                                       | 3 Flammable liquids   |
| <b>· Label</b>                                       | 3   |
| <b>· IATA</b>  |   |
|  |  |
| <b>· Class</b>                                       | 3 Flammable liquids   |
| <b>· Label</b>                                       | 3   |
| <b>· Packing group</b>                               |   |
| <b>· DOT/TDG, ADR, IMDG, IATA</b>                    | III   |
| <b>· Environmental hazards:</b>                      |   |
| <b>· Marine pollutant:</b>                           | Symbol (fish and tree)  |
| <b>· Special marking (ADR):</b>                      | Symbol (fish and tree)  |
| <b>· Special precautions for user</b>                | Warning: Flammable liquids  |
| <b>· Hazard identification number (Kemler code):</b> | 30  |

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Trade name: **Conductive Silver Pen**

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· <b>EMS Number:</b>	<u>F-E,S-E</u>
· <b>Stowage Category</b>	A
· <b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b>	
· <b>DOT/TDG</b>	
· <b>Quantity limitations</b>	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
· <b>ADR</b>	
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	5L
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>UN "Model Regulation":</b>	UN 1263 PAINT, 3, III

## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**  
No further relevant information available.

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

7440-22-4 silver

108-88-3 toluene

· **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

· **Canadian substance listings:**

· **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

· **Canadian Non-Domestic Substances List (NDSL)**

None of the ingredients is listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

64-17-5 Ethyl alcohol

· **Canadian Ingredient Disclosure list (limit 1%)**

7440-22-4 silver

108-88-3 toluene

123-86-4 n-butyl acetate

67-64-1 Acetone, Reagent Grade

110-19-0 isobutyl acetate

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according to HPR, Schedule 1

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Reviewed on 06/01/2022

Trade name: **Conductive Silver Pen**

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110-43-0	heptan-2-one
141-78-6	ethyl acetate

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS02    GHS07    GHS08

· **Signal word** *Danger*

· **Hazard-determining components of labeling:**

*toluene*

*Ethyl alcohol*

*n-butyl acetate*

*Acetone, Reagent Grade*

· **Hazard statements**

*Flammable liquid and vapour.*

*Causes skin irritation.*

*May cause cancer.*

*Suspected of damaging fertility or the unborn child.*

*May cause drowsiness or dizziness.*

*May cause damage to organs through prolonged or repeated exposure.*

*May be fatal if swallowed and enters airways.*

· **Precautionary statements**

*Obtain special instructions before use.*

*Do not handle until all safety precautions have been read and understood.*

*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*

*Ground and bond container and receiving equipment.*

*Use explosion-proof [electrical/ventilating/lighting] equipment.*

*Use non-sparking tools.*

*Take actions to prevent static discharges.*

*Do not breathe dust/fume/gas/mist/vapours/spray.*

*Wash thoroughly after handling.*

*Use only outdoors or in a well-ventilated area.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*If swallowed: Immediately call a poison center/doctor.*

*Specific treatment (see on this label).*

*Do NOT induce vomiting.*

*IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].*

*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

*IF exposed or concerned: Get medical advice/attention.*

*Call a poison center/doctor if you feel unwell.*

*Get medical advice/attention if you feel unwell.*

*Take off contaminated clothing and wash it before reuse.*

*If skin irritation occurs: Get medical advice/attention.*

*In case of fire: Use CO<sub>2</sub>, powder or water spray to extinguish.*

*Store in a well-ventilated place. Keep container tightly closed.*

*Store in a well-ventilated place. Keep cool.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

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# Safety Data Sheet

## according to HPR, Schedule 1

Printing date 06/01/2022

Reviewed on 06/01/2022

**Trade name: Conductive Silver Pen**

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**· Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

- **Contact:**
- **Date of the latest revision of the safety data sheet** 06/01/2022 / -
- **Abbreviations and acronyms:**
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative

CA

# Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 01.06.2022

Revision: 01.06.2022

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

- **1.1 Product identifier**
- **Trade name:** Conductive Silver Pen
- **Article number:** 12644-01, 12644-02
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture** Laboratory chemicals
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkcck@aol.com  
www.emsdiasum.com
- **Further information obtainable from:** Product safety department
- **1.4 Emergency telephone number:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



flame

Flam. Liq. 3 H226 Flammable liquid and vapour.



health hazard

Repr. 2 H361d Suspected of damaging the unborn child.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



Skin Irrit. 2 H315 Causes skin irritation.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS02



GHS07



GHS08

- **Signal word** *Danger*

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# Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 01.06.2022

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**Trade name: Conductive Silver Pen**

(Contd. of page 1)

- **Hazard-determining components of labelling:**

- toluene

- **Hazard statements**

- H226 Flammable liquid and vapour.

- H315 Causes skin irritation.

- H361d Suspected of damaging the unborn child.

- H373 May cause damage to organs through prolonged or repeated exposure.

- H304 May be fatal if swallowed and enters airways.

- **Precautionary statements**

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

- P321 Specific treatment (see on this label).

- P331 Do NOT induce vomiting.

- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].

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

- P405 Store locked up.

- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Additional information:**

- Product contains: Reportable explosives precursors. Making available, introduction, possession and use according to Regulation (EU) 2019/1148, Article 9.

- **2.3 Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

## SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**

- **Description:** Mixture of substances listed below with nonhazardous additions.

- **Dangerous components:**

CAS: 108-88-3 EINECS: 203-625-9	toluene ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	n-butyl acetate ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2.5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	Acetone, Reagent Grade ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2.5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	Ethyl alcohol ⚠ Flam. Liq. 2, H225	≤2.5%
CAS: 110-19-0 EINECS: 203-745-1	isobutyl acetate ⚠ Flam. Liq. 2, H225	≤2.5%
CAS: 110-43-0 EINECS: 203-767-1	heptan-2-one ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	≤2.5%
CAS: 141-78-6 EINECS: 205-500-4	ethyl acetate ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	≤2.5%

- **SVHC**

67-64-1	Acetone, Reagent Grade
64-17-5	Ethyl alcohol

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# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 01.06.2022

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Trade name: **Conductive Silver Pen**

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· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### SECTION 4: First aid measures

#### · 4.1 Description of first aid measures

##### · **General information:**

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

##### · **After inhalation:**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist. In case of unconsciousness place patient stably in side position for transportation.

##### · **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

##### · **After eye contact:** Rinse opened eye for several minutes under running water.

##### · **After swallowing:** If symptoms persist consult doctor.

#### · 4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

#### · 4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

### SECTION 5: Firefighting measures

#### · 5.1 Extinguishing media

##### · **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.

##### · **For safety reasons unsuitable extinguishing agents:** Water with full jet

#### · 5.2 Special hazards arising from the substance or mixture

No further relevant information available.

#### · 5.3 Advice for firefighters

##### · **Protective equipment:** Mouth respiratory protective device.

### SECTION 6: Accidental release measures

#### · 6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

#### · 6.2 Environmental precautions:

Do not allow to enter sewers/ surface or ground water.

#### · 6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Do not flush with water or aqueous cleansing agents

#### · 6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### SECTION 7: Handling and storage

#### · 7.1 Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of aerosols.

#### · **Information about fire - and explosion protection:**

Keep ignition sources away - Do not smoke.

Protect from heat.

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Trade name: **Conductive Silver Pen**

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Protect against electrostatic charges.

· **7.2 Conditions for safe storage, including any incompatibilities**· **Storage:**· **Requirements to be met by storerooms and receptacles:** No special requirements.· **Information about storage in one common storage facility:** Not required.· **Further information about storage conditions:**

Keep container tightly sealed.

Protect from heat and direct sunlight.

· **7.3 Specific end use(s)** No further relevant information available.

## SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**· **Additional information about design of technical facilities:** No further data; see item 7.· **Ingredients with limit values that require monitoring at the workplace:****108-88-3 toluene**WEL Short-term value: 384 mg/m<sup>3</sup>, 100 ppmLong-term value: 191 mg/m<sup>3</sup>, 50 ppm

Sk

**123-86-4 n-butyl acetate**WEL Short-term value: 966 mg/m<sup>3</sup>, 200 ppmLong-term value: 724 mg/m<sup>3</sup>, 150 ppm**67-64-1 Acetone, Reagent Grade**WEL Short-term value: 3620 mg/m<sup>3</sup>, 1500 ppmLong-term value: 1210 mg/m<sup>3</sup>, 500 ppm**64-17-5 Ethyl alcohol**WEL Long-term value: 1920 mg/m<sup>3</sup>, 1000 ppm**110-19-0 isobutyl acetate**WEL Short-term value: 903 mg/m<sup>3</sup>, 187 ppmLong-term value: 724 mg/m<sup>3</sup>, 150 ppm**110-43-0 heptan-2-one**WEL Short-term value: 475 mg/m<sup>3</sup>, 100 ppmLong-term value: 237 mg/m<sup>3</sup>, 50 ppm

Sk

**141-78-6 ethyl acetate**WEL Short-term value: 1468 mg/m<sup>3</sup>, 400 ppmLong-term value: 734 mg/m<sup>3</sup>, 200 ppm· **Additional information:** The lists valid during the making were used as basis.· **8.2 Exposure controls**· **Personal protective equipment:**· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the skin.

Avoid contact with the eyes and skin.

(Contd. on page 5)

# Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 01.06.2022

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Trade name: **Conductive Silver Pen**

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- **Respiratory protection:**

*In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.*

- **Protection of hands:**



Protective gloves

*The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.*

*Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.*

*Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation*

- **Material of gloves**

*The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.*

- **Penetration time of glove material**

*The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.*

- **Eye protection:**



Tightly sealed goggles

## SECTION 9: Physical and chemical properties

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

- **General Information**

- **Appearance:**

**Form:** Liquid

**Colour:** Grey

- **Odour:** Sweetish

- **Odour threshold:** Not determined.

- **pH-value:** Not determined.

- **Change in condition**

**Melting point/freezing point:** Undetermined.

**Initial boiling point and boiling range:** 126 °C

- **Flash point:** 24 °C

- **Flammability (solid, gas):** Not applicable.

- **Ignition temperature:** 370 °C

- **Decomposition temperature:** Not determined.

- **Auto-ignition temperature:** Product is not selfigniting.

- **Explosive properties:** Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

- **Explosion limits:**

**Lower:** 1.2 Vol %

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<b>Upper:</b>	7 Vol %
· <b>Vapour pressure at 20 °C:</b>	6.7 hPa
· <b>Density at 20 °C:</b>	2 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with water:</b>	Not miscible or difficult to mix.
· <b>Partition coefficient: n-octanol/water:</b>	Not determined.
· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	31.1 %
<b>VOC (EC)</b>	31.10 %
<b>Solids content:</b>	45.8 %
· <b>9.2 Other information</b>	No further relevant information available.

### SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

### SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values relevant for classification:**

**108-88-3 toluene**

Oral	LD50	5,000 mg/kg (rat)
Dermal	LD50	12,124 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)

- **Primary irritant effect:**
- **Skin corrosion/irritation**  
Causes skin irritation.
- **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **Additional toxicological information:**
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
- **Carcinogenicity** Based on available data, the classification criteria are not met.

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- **Reproductive toxicity**  
Suspected of damaging the unborn child.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure**  
May cause damage to organs through prolonged or repeated exposure.
- **Aspiration hazard**  
May be fatal if swallowed and enters airways.

### SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

### SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

### SECTION 14: Transport information

- |                                       |                         |
|---------------------------------------|-------------------------|
| · <b>14.1 UN-Number</b>               |                         |
| · <b>ADR, IMDG, IATA</b>              | UN1263                  |
| · <b>14.2 UN proper shipping name</b> |                         |
| · <b>ADR</b>                          | 1263 PAINT              |
| · <b>IMDG</b>                         | PAINT, MARINE POLLUTANT |
| · <b>IATA</b>                         | PAINT                   |

- **14.3 Transport hazard class(es)**

- **ADR, IMDG**



- **Class** 3 Flammable liquids.

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· <b>Label</b>	3
· <b>IATA</b>	
	
· <b>Class</b>	3 Flammable liquids.
· <b>Label</b>	3
· <b>14.4 Packing group</b> · <b>ADR, IMDG, IATA</b>	III
· <b>14.5 Environmental hazards:</b>	
· <b>Marine pollutant:</b>	Symbol (fish and tree)
· <b>Special marking (ADR):</b>	Symbol (fish and tree)
· <b>14.6 Special precautions for user</b>	Warning: Flammable liquids.
· <b>Hazard identification number (Kemler code):</b>	30
· <b>EMS Number:</b>	F-E, <u>S-E</u>
· <b>Stowage Category</b>	A
· <b>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</b>	Not applicable.
· <b>Transport/Additional information:</b>	
· <b>ADR</b>	
· <b>Limited quantities (LQ)</b>	5L
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>Transport category</b>	3
· <b>Tunnel restriction code</b>	D/E
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	5L
· <b>Excepted quantities (EQ)</b>	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· <b>UN "Model Regulation":</b>	UN 1263 PAINT, 3, III

### SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Directive 2012/18/EU
- Named dangerous substances - ANNEX I None of the ingredients is listed.
- Seveso category P5c FLAMMABLE LIQUIDS
- Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t

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- **National regulations:**
- **Other regulations, limitations and prohibitive regulations**

- **Substances of very high concern (SVHC) according to REACH, Article 57**

67-64-1	Acetone, Reagent Grade
64-17-5	Ethyl alcohol

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

- **Relevant phrases**

- H225 Highly flammable liquid and vapour.
- H226 Flammable liquid and vapour.
- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H336 May cause drowsiness or dizziness.
- H361d Suspected of damaging the unborn child.
- H373 May cause damage to organs through prolonged or repeated exposure.

- **Abbreviations and acronyms:**

- ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- VOC: Volatile Organic Compounds (USA, EU)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- PBT: Persistent, Bioaccumulative and Toxic
- SVHC: Substances of Very High Concern
- vPvB: very Persistent and very Bioaccumulative
- Flam. Liq. 2: Flammable liquids – Category 2
- Flam. Liq. 3: Flammable liquids – Category 3
- Acute Tox. 4: Acute toxicity – Category 4
- Skin Irrit. 2: Skin corrosion/irritation – Category 2
- Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
- Repr. 2: Reproductive toxicity – Category 2
- STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
- STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
- Asp. Tox. 1: Aspiration hazard – Category 1

# Veiligheidsinformatieblad

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## RUBRIEK 1: Identificatie van de stof of het mengsel en van de vennootschap/onderneming

### · 1.1 Productidentificatie

· Handelsnaam: Conductive Silver Pen

· Artikelnummer: 12644-01, 12644-02

· UFI: W7P0-6083-P00T-7CJA

### · 1.2 Relevant geïdentificeerd gebruik van de stof of het mengsel en ontraden gebruik

Geen verdere relevante informatie verkrijgbaar.

· Toepassing van de stof / van de bereiding Laboratoriumchemicaliën

### · 1.3 Details betreffende de verstrekker van het veiligheidsinformatieblad

#### · Fabrikant/leverancier:

Electron Microscopy Sciences

1560 Industry Road

USA-Hatfield, PA 19440

Tel: 215-412-8400 Fax: 215-412-8450

email: [sgkcck@aol.com](mailto:sgkcck@aol.com)

[www.emsdiasum.com](http://www.emsdiasum.com)

Aurion

Binnenhaven 5

6709 PD Wageningen

The Netherlands

Tel: 31 317 415094

Fax: 31 317 415955

email: [info@aurion.nl](mailto:info@aurion.nl)

· Inlichtingengevende sector: *Product safety department*

### · 1.4 Telefoonnummer voor noodgevallen:

ChemTrec 1-800-424-9300 Contract CCN7661

1-703-527-3887

## RUBRIEK 2: Identificatie van de gevaren

### · 2.1 Indeling van de stof of het mengsel

· Indeling overeenkomstig Verordening (EG) nr. 1272/2008



GHS02 vlam

Flam. Liq. 3 H226 Ontvlambare vloeistof en damp.



GHS08 gezondheidsgevaar

Repr. 2 H361d Wordt ervan verdacht het ongeboren kind te schaden.

STOT RE 2 H373 Kan schade aan organen veroorzaken bij langdurige of herhaalde blootstelling.

Asp. Tox. 1 H304 Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terechtkomt.



GHS07

Skin Irrit. 2 H315 Veroorzaakt huidirritatie.

### · 2.2 Etiketteringselementen

· Etikettering overeenkomstig Verordening (EG) nr. 1272/2008

Het product is geclassificeerd en geëtiketteerd volgens de CLP-verordening.

(Vervolg op blz. 2)

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**Gevarenpictogrammen**

GHS02 GHS07 GHS08

**Signaalwoord Gevaar****Gevaaraanduidende componenten voor de etikettering:**

tolueen

**Gevarenaanduidingen**

H226 Ontvlambare vloeistof en damp.

H315 Veroorzaakt huidirritatie.

H361d Wordt ervan verdacht het ongeboren kind te schaden.

H373 Kan schade aan organen veroorzaken bij langdurige of herhaalde blootstelling.

H304 Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terechtkomt.

**Veiligheidsaanbevelingen**

P301+P310 NA INSLIKKEN: onmiddellijk een ANTIGIFCENTRUM/arts raadplegen.

P321 Specifieke behandeling vereist (zie op dit etiket).

P331 GEEN braken opwekken.

P303+P361+P353 BIJ CONTACT MET DE HUID (of het haar): verontreinigde kleding onmiddellijk uittrekken. Huid met water afspoelen [of afdouchen].

P362+P364 Verontreinigde kleding uittrekken en wassen alvorens deze opnieuw te gebruiken.

P405 Achter slot bewaren.

P501 De inhoud en de verpakking verwerken volgens de plaatselijke/regionale/nationale/internationale voorschriften.

**Aanvullende gegevens:**

Produkt bevat: Precursoren voor explosieven die moeten worden gemeld. Aanbieden, binnenbrengen, bezit en gebruik volgens Verordening (EU) 2019/1148, Artikel 9.

**2.3 Andere gevaren****Resultaten van PBT- en zPzB-beoordeling****PBT:** Niet bruikbaar.**zPzB:** Niet bruikbaar.

## RUBRIEK 3: Samenstelling en informatie over de bestanddelen

**3.2 Chemische karakterisering: Mengsels****Beschrijving:** Mengsel van na elkaar aangevoerde stoffen met ongevaarlijke bijmengingen.**Gevaarlijke inhoudstoffen:**

CAS: 108-88-3 EINECS: 203-625-9	tolueen ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	n-butylacetaat ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	aceton ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	ethanol ⚠ Flam. Liq. 2, H225	≤2,5%

(Vervolg op blz. 3)

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CAS: 110-19-0	isobutylacetaat	≤2,5%
EINECS: 203-745-1	⚠ Flam. Liq. 2, H225	
CAS: 110-43-0	heptaan-2-on	≤2,5%
EINECS: 203-767-1	⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; ⚠ Acute Tox. 4, H332	
CAS: 141-78-6	ethylacetaat	≤2,5%
EINECS: 205-500-4	⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	
· <b>SVHC</b>		
67-64-1	aceton	
64-17-5	ethanol	

· **Aanvullende gegevens:**

De woordelijke inhoud van de opgegeven aanwijzingen inzake de mogelijke gevaren is te vinden in hoofdstuk 16.

### RUBRIEK 4: Eerstehulpmaatregelen

· **4.1 Beschrijving van de eerstehulpmaatregelen**· **Algemene informatie:**

Het is mogelijk dat vergiftigingssymptomen pas na vele uren optreden. Om deze reden is medische controle gedurende minstens 48 uur na een ongeval noodzakelijk.

· **Na het inademen:**

Frisse lucht toedienen, eventueel beademing, warmte. Wanneer de klachten niet ophouden, een arts raadplegen. Bij bewusteloosheid ligging en vervoer in stabiele zijligging.

· **Na huidcontact:** Onmiddellijk met water en zeep afwassen en goed naspoelen.· **Na oogcontact:** Ogen bij geopend ooglid meerdere minuten met stromend water spoelen· **Na inslikken:** Als de klachten niet minderen, een arts raadplegen· **4.2 Belangrijkste acute en uitgestelde symptomen en effecten** Geen verdere relevante informatie verkrijgbaar.· **4.3 Vermelding van de vereiste onmiddellijke medische verzorging en speciale behandeling**

Geen verdere relevante informatie verkrijgbaar.

### RUBRIEK 5: Brandbestrijdingsmaatregelen

· **5.1 Blusmiddelen**· **Geschikte blusmiddelen:** CO<sub>2</sub>, zand, bluspoeder. Geen water gebruiken.· **Blusmiddelen die uit veiligheidsoogpunt niet geschikt zijn:** Krachtige waterstraal· **5.2 Speciale gevaren die door de stof of het mengsel worden veroorzaakt**

Geen verdere relevante informatie verkrijgbaar.

· **5.3 Advies voor brandweerlieden**· **Speciale beschermende kleding:** Ademhalingsstoestel aantrekken.

### RUBRIEK 6: Maatregelen bij het accidenteel vrijkomen van de stof of het mengsel

· **6.1 Persoonlijke voorzorgsmaatregelen, beschermingsmiddelen en noodprocedures**

Beschermende kleding aantrekken. Niet beschermde personen op afstand houden.

· **6.2 Milieuvoorzorgsmaatregelen:** Niet in de riolering/het oppervlaktewater/het grondwater laten terecht komen.· **6.3 Insluifings- en reinigingsmethoden en -materiaal:**

Met vloeistofbindend materiaal (zand, bergmeel, zuurbinder, universele binder, zaagmeel) opnemen.

Besmet materiaal zoals afval volgens punt 13 verwijderen.

Voor voldoende ventilatie zorgen.

Niet met water of waterachtige reinigingsmiddelen wegspoelen.

· **6.4 Verwijzing naar andere rubrieken**

Informatie inzake veilig gebruik - zie hoofdstuk 7.

(Vervolg op blz. 4)

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Informatie inzake persoonlijke beschermingsuitrusting - zie hoofdstuk 8.  
Informatie inzake berging - zie hoofdstuk 13.

### RUBRIEK 7: Hantering en opslag

- **7.1 Voorzorgsmaatregelen voor het veilig hanteren van de stof of het mengsel**  
Voor goede ventilatie/afzuiging op de werkplaatsen zorgen.  
Aërosolvorming vermijden.
- **Informatie m.b.t. brand- en ontploffingsgevaar:**  
Onststekingsbronnen op afstand houden - niet roken.  
Beschermen tegen hitte.  
Maatregelen treffen tegen ontlading van statische elektriciteit.
- **7.2 Voorwaarden voor een veilige opslag, met inbegrip van incompatibele producten**
- **Opslag:**
- **Eisen ten opzichte van opslagruimte en tanks:** Geen bijzondere eisen.
- **Informatie m.b.t. gezamenlijke opslag:** Niet noodzakelijk.
- **Verdere inlichtingen over eisen m.b.t. de opslag:**  
Tanks ondoordringbaar gesloten houden.  
Tegen hitte en directe zonnestralen beschermen.
- **7.3 Specifiek eindgebruik** Geen verdere relevante informatie verkrijgbaar.

### RUBRIEK 8: Maatregelen ter beheersing van blootstelling/persoonlijke bescherming

- **8.1 Controleparameters**
- **Aanvullende gegevens m.b.t. de inrichting van technische installaties:** Geen aanvullende gegevens. Zie 7.

· **Bestanddelen met grenswaarden die m.b.t. de werkruimte in acht genomen moeten worden:**

#### 108-88-3 toluen

WGW Korte termijn waarde: 384 mg/m<sup>3</sup>, 100 ppm  
Lange termijn waarde: 150 mg/m<sup>3</sup>, 39 ppm

#### 67-64-1 aceton

WGW Korte termijn waarde: 2420 mg/m<sup>3</sup>, 1000 ppm  
Lange termijn waarde: 1210 mg/m<sup>3</sup>, 500 ppm

#### 64-17-5 ethanol

WGW Korte termijn waarde: 1900 mg/m<sup>3</sup>, 990 ppm  
Lange termijn waarde: 260 mg/m<sup>3</sup>, 35 ppm

#### 110-43-0 heptaan-2-on

WGW Lange termijn waarde: 233 mg/m<sup>3</sup>, 49 ppm

#### 141-78-6 ethylacetaat

WGW Korte termijn waarde: 1468 mg/m<sup>3</sup>  
Lange termijn waarde: 734 mg/m<sup>3</sup>

· **Aanvullende gegevens:** Als basis dienden lijsten die bij opstelling geldig waren.

- **8.2 Maatregelen ter beheersing van blootstelling**
- **Persoonlijke beschermingsvoorzieningen:**
- **Algemene beschermings- en gezondheidsmaatregelen:**  
Verwijderd houden van eet- en drinkwaren.  
Verontreinigde kleding onmiddellijk uittrekken.  
Vóór de pauze en aan het einde van werktijd handen wassen.  
Aanraking met de huid vermijden.

(Vervolg op blz. 5)



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Aanraking met de ogen en de huid vermijden.

· **Ademhalingsbescherming:**

Bij korte of geringe belasting ademfiltertoestel; bij intensieve resp. langdurige expositie een van de omringende lucht onafhankelijk ademhalingsstoestel gebruiken.

· **Handbescherming:**



Veiligheidshandschoenen

Het handschoenmateriaal moet ondoorlatend en bestand zijn tegen het product / de stof / de bereiding.

Op grond van falende testen kan geen aanbeveling voor handschoenmateriaal voor het product / de bereiding / het chemicaliënmengsel afgegeven worden.

Kies handschoenmateriaal rekening houdend met de penetratietijden, de permeatiegraden en de degradatie.

· **Handschoenmateriaal**

De keuze van een geschikte handschoen is niet alleen afhankelijk van het materiaal, maar ook van andere kwaliteitskenmerken en verschilt van fabrikant tot fabrikant. Aangezien het product uit meerdere stoffen is samengesteld, is de duurzaamheid van de handschoenmaterialen niet vooraf berekenbaar en moet derhalve vóór het gebruik worden getest.

· **Doordringingstijd van het handschoenmateriaal**

De precieze penetratietijd kunt u te weten komen bij de handschoenfabrikant; houd er rekening mee.

· **Oogbescherming:**



Nauw aansluitende veiligheidsbril

### RUBRIEK 9: Fysische en chemische eigenschappen

· **9.1 Informatie over fysische en chemische basiseigenschappen**

· **Algemene gegevens**

· **Voorkomen:**

· <b>Vorm:</b>	Vloeistof
· <b>Kleur:</b>	Grijs
· <b>Geur:</b>	Zoetig
· <b>Geurdrempelwaarde:</b>	Niet bepaald.

· **pH-waarde:** Niet bepaald.

· **Toestandsverandering**

· <b>Smelt-/vriespunt:</b>	Niet bepaald.
· <b>Beginkookpunt en kooktraject:</b>	126 °C

· **Vlampunt:** 24 °C

· **Ontvlambaarheid (vast, gas):** Niet bruikbaar.

· **Ontstekingsstemperatuur:** 370 °C

· **Ontledingstemperatuur:** Niet bepaald.

· **Zelfontbrandingstemperatuur:** Het produkt ontbrandt niet uit zichzelf.

· **Ontploffingseigenschappen:** Het produkt is niet ontploffingsgevaarlijk, maar de vorming van ontploffingsgevaarlijke damp-/luchtmengsels is mogelijk.

(Vervolg op blz. 6)

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· <b>Ontploffingsgrenzen:</b>	
<b>Onderste:</b>	1,2 Vol %
<b>Bovenste:</b>	7 Vol %
· <b>Dampspanning bij 20 °C:</b>	6,7 hPa
· <b>Dichtheid bij 20 °C:</b>	2 g/cm <sup>3</sup>
· <b>Relatieve dichtheid</b>	Niet bepaald.
· <b>Dampdichtheid</b>	Niet bepaald.
· <b>Verdampingssnelheid</b>	Niet bepaald.
· <b>Oplosbaarheid in/mengbaarheid met Water:</b>	Niet resp. gering mengbaar.
· <b>Verdelingscoëfficiënt: n-octanol/water:</b>	Niet bepaald.
· <b>Viscositeit</b>	
<b>Dynamisch:</b>	Niet bepaald.
<b>Kinematisch:</b>	Niet bepaald.
· <b>Oplosmiddelgehalte:</b>	
<b>Organisch oplosmiddel:</b>	31,1 %
<b>VOC (EG)</b>	31,10 %
<b>Gehalte aan vaste bestanddelen:</b>	45,8 %
· <b>9.2 Overige informatie</b>	Geen verdere relevante informatie verkrijgbaar.

### RUBRIEK 10: Stabiliteit en reactiviteit

- **10.1 Reactiviteit** Geen verdere relevante informatie verkrijgbaar.
- **10.2 Chemische stabiliteit**
- **Thermische afbraak / te vermijden omstandigheden:** Geen afbraak bij gebruik volgens voorschrift.
- **10.3 Mogelijke gevaarlijke reacties** Geen gevaarlijke reacties bekend.
- **10.4 Te vermijden omstandigheden** Geen verdere relevante informatie verkrijgbaar.
- **10.5 Chemisch op elkaar inwerkende materialen:** Geen verdere relevante informatie verkrijgbaar.
- **10.6 Gevaarlijke ontledingsproducten:** Geen gevaarlijke ontbindingsproducten bekend.

### RUBRIEK 11: Toxicologische informatie

- **11.1 Informatie over toxicologische effecten**
- **Acute toxiciteit** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.

#### · Indelingsrelevantie LD/LC50-waarden:

##### 108-88-3 toluen

Oraal	LD50	5.000 mg/kg (rat)
Dermaal	LD50	12.124 mg/kg (rabbit)
Inhalatief	LC50/4 h	5.320 mg/l (mouse)

- **Primaire aandoening:**
- **Huidcorrosie/-irritatie**  
Veroorzaakt huidirritatie.
- **Ernstig oogletsel/oogirritatie** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Sensibilisatie van de luchtwegen/de huid**  
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.

(Vervolg op blz. 7)

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- **Aanvullende toxicologische informatie:**
- **CMR-effecten (kankerverwekkendheid, mutageniteit en giftigheid voor de voortplanting)**
- **Mutageniteit in geslachtscellen** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Kankerverwekkendheid** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **Giftigheid voor de voortplanting**  
Wordt ervan verdacht het ongeboren kind te schaden.
- **STOT bij eenmalige blootstelling** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **STOT bij herhaalde blootstelling**  
Kan schade aan organen veroorzaken bij langdurige of herhaalde blootstelling.
- **Gevaar bij inademing**  
Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terechtkomt.

### RUBRIEK 12: Ecologische informatie

- **12.1 Toxiciteit**
- **Aquatische toxiciteit:** Geen verdere relevante informatie verkrijgbaar.
- **12.2 Persistentie en afbreekbaarheid** Geen verdere relevante informatie verkrijgbaar.
- **12.3 Bioaccumulatie** Geen verdere relevante informatie verkrijgbaar.
- **12.4 Mobiliteit in de bodem** Geen verdere relevante informatie verkrijgbaar.
- **Verdere ecologische informatie:**
- **Algemene informatie:**  
Waterbezwaarlijkheid (NL): Z(1) niet afbreekbare stoffen met gevaarlijke eigenschappen voor mens en milieu (carcinogeniteit/mutageniteit/ reprotoxiciteit/bioacumulerend vermogen/ toxiciteit of persistentie)  
Gevaar voor water klasse 1 (D) (Zelfclassificatie): gevaar voor water klein  
Niet onverdund of in grote hoeveelheden lozen in grondwater, in oppervlaktewater of in de riolering.
- **12.5 Resultaten van PBT- en zPzB-beoordeling**
- **PBT:** Niet bruikbaar.
- **zPzB:** Niet bruikbaar.
- **12.6 Andere schadelijke effecten** Geen verdere relevante informatie verkrijgbaar.

### RUBRIEK 13: Instructies voor verwijdering

- **13.1 Afvalverwerkingsmethoden**
- **Aanbeveling:** Mag niet tesamen met huisvuil gestort worden of in de riolering terechtkomen.
- **Niet gereinigde verpakkingen:**
- **Aanbeveling:** Afvalverwijdering volgens overheidsbepalingen.

### RUBRIEK 14: Informatie met betrekking tot het vervoer

- **14.1 VN-nummer**
- **ADR, IMDG, IATA** UNI263
- **14.2 Juiste ladingnaam overeenkomstig de modelreglementen van de VN**
- **ADR** 1263 VERF
- **IMDG** PAINT, MARINE POLLUTANT
- **IATA** PAINT

(Vervolg op blz. 8)

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(Vervolg van blz. 7)

· **14.3 Transportgevaarenklasse(n)**· **ADR, IMDG**

· **klasse** 3 Brandbare vloeistoffen  
 · **Etiket** 3

· **IATA**

· **Class** 3 Brandbare vloeistoffen  
 · **Label** 3

· **14.4 Verpakkingsgroep:**

· **ADR, IMDG, IATA** III

· **14.5 Milieugevaren:**

· **Marine pollutant:** Symbool (vis en boom)  
 · **Bijzondere kenmerking (ADR):** Symbool (vis en boom)

· **14.6 Bijzondere voorzorgen voor de gebruiker** Waarschuwing: Brandbare vloeistoffen

· **Gevaarsidentificatienummer (Kemler-getal):** 30  
 · **EMS-nummer:** F-E,S-E  
 · **Stowage Category** A

· **14.7 Vervoer in bulk overeenkomstig bijlage II bij**

**Marpol en de IBC-code** Niet bruikbaar.

· **Transport/verdere gegevens:**· **ADR**

· **Beperkte hoeveelheden (LQ)** 5L  
 · **Uitgezonderde hoeveelheden (EQ)** Code: E1  
 Grootste netto hoeveelheid per binnenverpakking: 30 ml  
 Grootste netto hoeveelheid per buitenverpakking: 1000 ml  
 · **Vervoerscategorie** 3  
 · **Tunnelbeperkingscode** D/E

· **IMDG**

· **Limited quantities (LQ)** 5L  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **VN "Model Regulation":** UN 1263 VERF, 3, III

NL

(Vervolg op blz. 9)

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## RUBRIEK 15: Regelgeving

### · 15.1 Specifieke veiligheids-, gezondheids- en milieureglementen en -wetgeving voor de stof of het mengsel

#### · SZW-lijst van kankerverwekkende stoffen

64-17-5 ethanol

#### · SZW-lijst van mutagene stoffen

geen der bestanddelen staat op de lijst.

#### · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Vruchtbaarheid

64-17-5 ethanol

IA

#### · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Ontwikkeling

108-88-3 toluen

2

64-17-5 ethanol

IA

#### · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Borstvoeding

64-17-5 ethanol

x

#### · Lijst Zeer Zorgwekkende Stoffen (ZZS)

geen der bestanddelen staat op de lijst.

#### · Richtlijn 2012/18/EU

· Gevaarlijke stoffen die met naam genoemd worden - BIJLAGE I geen der bestanddelen staat op de lijst.

· Seveso-categorie P5c ONTVLAMBARE VLOEISTOFFEN

· Drempelwaarde (ton) voor toepassing van voorschriften voor lagedrempelinrichtingen 5.000 t

· Drempelwaarde (ton) voor toepassing van voorschriften voor hogedrempelinrichtingen 50.000 t

· Verordening (EG) nr. 1907/2006 BIJLAGE XVII Beperkingsvoorwaarden: 3, 48

#### · Richtlijn 2011/65/EU betreffende beperking van het gebruik van bepaalde gevaarlijke stoffen in elektrische en elektronische apparatuur - Bijlage II

geen der bestanddelen staat op de lijst.

#### · VERORDENING (EU) 2019/1148

#### · Bijlage I - PRECURSOREN VOOR EXPLOSIEVEN WAARVOOR EEN BEPERKING GELDT (Bovengrenswaarde ten behoeve van vergunningverlening op grond van artikel 5, lid 3)

geen der bestanddelen staat op de lijst.

#### · Bijlage II - PRECURSOREN VOOR EXPLOSIEVEN DIE MOETEN WORDEN GEMELD

67-64-1 aceton

#### · Verordening (EG) nr. 273/2004 inzake drugsprecursoren

108-88-3 toluen

3

67-64-1 aceton

3

#### · Verordening (EG) Nr. 111/2005 houdende voorschriften voor het toezicht op de handel tussen de Gemeenschap en derde landen in drugsprecursoren

108-88-3 toluen

3

67-64-1 aceton

3

#### · Nationale voorschriften:

##### · Gevaarklasse v. water:

Waterbezwaarlijkheid (NL): Z(1) niet afbreekbare stoffen met gevaarlijke eigenschappen voor mens en milieu (carcinogeniteit/mutageniteit/ reprotoxiciteit/bioacumulerend vermogen/ toxiciteit of persistentie)

(Vervolg op blz. 10)

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· **Aanvullende voorschriften, beperkingen en verbodsverordeningen**

· **Zeer zorgwekkende stoffen (SVHC) volgens REACH, artikel 57**

67-64-1	aceton
64-17-5	ethanol

· **15.2 Chemischeveiligheidsbeoordeling:** Een chemische veiligheidsbeoordeling is niet uitgevoerd.

### RUBRIEK 16: Overige informatie

Deze gegevens zijn gebaseerd op de huidige stand van onze kennis. Zij beschrijven echter geen garantie van produkteigenschappen en vestigen geen contractuele rechtsbetrekking.

· **Relevante zinnen**

H225 Licht ontvlambare vloeistof en damp.

H226 Ontvlambare vloeistof en damp.

H302 Schadelijk bij inslikken.

H304 Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terecht komt.

H315 Veroorzaakt huidirritatie.

H319 Veroorzaakt ernstige oogirritatie.

H332 Schadelijk bij inademing.

H336 Kan slaperigheid of duizeligheid veroorzaken.

H361d Wordt ervan verdacht het ongeboren kind te schaden.

H373 Kan schade aan organen veroorzaken bij langdurige of herhaalde blootstelling.

· **Afkortingen en acroniemen:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Ontvlambare vloeistoffen – Categorie 2

Flam. Liq. 3: Ontvlambare vloeistoffen – Categorie 3

Acute Tox. 4: Acute toxiciteit – Categorie 4

Skin Irrit. 2: Huidcorrosie/-irritatie – Categorie 2

Eye Irrit. 2: Ernstig oogletsel/oogirritatie – Categorie 2

Repr. 2: Voortplantingstoxiciteit – Categorie 2

STOT SE 3: Specifieke doelorgaantoxiciteit bij eenmalige blootstelling – Categorie 3

STOT RE 2: Specifieke doelorgaantoxiciteit bij herhaalde blootstelling – Categorie 2

Asp. Tox. 1: Aspiratiegevaar – Categorie 1

# Fiche de données de sécurité

## selon 1907/2006/CE, Article 31

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### RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

- **1.1 Identificateur de produit**
- **Nom du produit:** Conductive Silver Pen
- **Code du produit:** 12644-01, 12644-02
- **UFI:** W7P0-6083-P00T-7CJA
- **1.2 Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées**  
Pas d'autres informations importantes disponibles.
- **Emploi de la substance / de la préparation** Produits chimiques pour laboratoires
- **1.3 Renseignements concernant le fournisseur de la fiche de données de sécurité**
- **Producteur/fournisseur:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkceck@aol.com  
www.emsdiasum.com
- **Service chargé des renseignements:** Product safety department
- **1.4 Numéro d'appel d'urgence:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

### RUBRIQUE 2: Identification des dangers

- **2.1 Classification de la substance ou du mélange**
- **Classification selon le règlement (CE) n° 1272/2008**



GHS02 flamme

Flam. Liq. 3 H226 Liquide et vapeurs inflammables.



GHS08 danger pour la santé

Repr. 2 H361d Susceptible de nuire au fœtus.

STOT RE 2 H373 Risque présumé d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.

Asp. Tox. 1 H304 Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.



GHS07

Skin Irrit. 2 H315 Provoque une irritation cutanée.

- **2.2 Éléments d'étiquetage**
- **Étiquetage selon le règlement (CE) n° 1272/2008** Le produit est classifié et étiqueté selon le règlement CLP.
- **Pictogrammes de danger**



GHS02



GHS07



GHS08

(suite page 2)

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**Nom du produit: Conductive Silver Pen**

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· **Mention d'avertissement** *Danger*

· **Composants dangereux déterminants pour l'étiquetage:**

toluène

· **Mentions de danger**

H226 *Liquide et vapeurs inflammables.*

H315 *Provoque une irritation cutanée.*

H361d *Susceptible de nuire au fœtus.*

H373 *Risque présumé d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.*

H304 *Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.*

· **Conseils de prudence**

P301+P310 *EN CAS D'INGESTION: Appeler immédiatement un CENTRE ANTIPOISON/un médecin.*

P321 *Traitement spécifique (voir sur cette étiquette).*

P331 *NE PAS faire vomir.*

P303+P361+P353 *EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux): Enlever immédiatement tous les vêtements contaminés. Rincer la peau à l'eau [ou se doucher].*

P362+P364 *Enlever les vêtements contaminés et les laver avant réutilisation.*

P405 *Garder sous clef.*

P501 *Éliminer le contenu/récipient conformément à la réglementation locale/régionale/nationale/internationale.*

· **Indications complémentaires:**

*Le produit contient: Précurseurs d'explosifs devant faire l'objet d'un signalement. Mise à disposition, introduction, détention et utilisation selon règlement (UE) 2019/1148, article 9.*

· **2.3 Autres dangers**

· **Résultats des évaluations PBT et vPvB**

· **PBT:** Non applicable.

· **vPvB:** Non applicable.

### RUBRIQUE 3: Composition/informations sur les composants

· **3.2 Caractérisation chimique: Mélanges**

· **Description:** Mélange des substances mentionnées à la suite avec des additifs non dangereux.

· **Composants dangereux:**

CAS: 108-88-3 EINECS: 203-625-9	toluène ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	acétate de n-butyle ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	acétone ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	éthanol ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-19-0 EINECS: 203-745-1	acétate d'isobutyle ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-43-0 EINECS: 203-767-1	heptane-2-one ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	≤2,5%
CAS: 141-78-6 EINECS: 205-500-4	acétate d'éthyle ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	≤2,5%

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· <b>SVHC</b>	
67-64-1	acétone
64-17-5	éthanol

· **Indications complémentaires:** Pour le libellé des phrases de risque citées, se référer au chapitre 16.

### RUBRIQUE 4: Premiers secours

· **4.1 Description des premiers secours**

· **Remarques générales:**

Les symptômes d'intoxication peuvent apparaître après de nombreuses heures seulement; une surveillance médicale est donc nécessaire au moins 48 heures après un accident.

· **Après inhalation:**

Donner de l'air frais. Assistance respiratoire si nécessaire. Tenir le malade au chaud. Si les troubles persistent, consulter un médecin.

En cas d'inconscience, coucher et transporter la personne en position latérale stable.

· **Après contact avec la peau:** Laver immédiatement à l'eau et au savon et bien rincer.

· **Après contact avec les yeux:**

Rincer les yeux, sous l'eau courante, pendant plusieurs minutes, en écartant bien les paupières.

· **Après ingestion:** Si les troubles persistent, consulter un médecin.

· **4.2 Principaux symptômes et effets, aigus et différés** Pas d'autres informations importantes disponibles.

· **4.3 Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires**

Pas d'autres informations importantes disponibles.

### RUBRIQUE 5: Mesures de lutte contre l'incendie

· **5.1 Moyens d'extinction**

· **Moyens d'extinction:** CO<sub>2</sub>, sable, poudre d'extinction. Ne pas utiliser d'eau.

· **Produits extincteurs déconseillés pour des raisons de sécurité:** Jet d'eau à grand débit

· **5.2 Dangers particuliers résultant de la substance ou du mélange**

Pas d'autres informations importantes disponibles.

· **5.3 Conseils aux pompiers**

· **Équipement spécial de sécurité:** Porter un appareil de protection respiratoire.

### RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

· **6.1 Précautions individuelles, équipement de protection et procédures d'urgence**

Porter un équipement de sécurité. Eloigner les personnes non protégées.

· **6.2 Précautions pour la protection de l'environnement:**

Ne pas rejeter dans les canalisations, dans les eaux de surface et dans les nappes d'eau souterraines.

· **6.3 Méthodes et matériel de confinement et de nettoyage:**

Recueillir les liquides à l'aide d'un produit absorbant (sable, kieselguhr, neutralisant d'acide, liant universel, sciure).

Evacuer les matériaux contaminés en tant que déchets conformément au point 13.

Assurer une aération suffisante.

Ne pas rincer à l'eau ou aux produits nettoyants aqueux.

· **6.4 Référence à d'autres rubriques**

Afin d'obtenir des informations pour une manipulation sûre, consulter le chapitre 7.

Afin d'obtenir des informations sur les équipements de protection personnels, consulter le chapitre 8.

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Afin d'obtenir des informations sur l'élimination, consulter le chapitre 13.

### RUBRIQUE 7: Manipulation et stockage

- **7.1 Précautions à prendre pour une manipulation sans danger**  
Veiller à une bonne ventilation/aspiration du poste de travail.  
Eviter la formation d'aérosols.
- **Préventions des incendies et des explosions:**  
Tenir à l'abri des sources d'inflammation - ne pas fumer.  
Tenir à l'abri de la chaleur.  
Prendre des mesures contre les charges électrostatiques.
- **7.2 Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités**
- **Stockage:**
- **Exigences concernant les lieux et conteneurs de stockage:** Aucune exigence particulière.
- **Indications concernant le stockage commun:** Pas nécessaire.
- **Autres indications sur les conditions de stockage:**  
Tenir les emballages hermétiquement fermés.  
Protéger de la forte chaleur et du rayonnement direct du soleil.
- **7.3 Utilisation(s) finale(s) particulière(s)** Pas d'autres informations importantes disponibles.

### RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

- **8.1 Paramètres de contrôle**
- **Indications complémentaires pour l'agencement des installations techniques:**  
Sans autre indication, voir point 7.

- **Composants présentant des valeurs-seuil à surveiller par poste de travail:**

#### **108-88-3 toluène**

<b>VLEP</b>	Valeur momentanée: 384 mg/m <sup>3</sup> , 100 ppm Valeur à long terme: 76,8 mg/m <sup>3</sup> , 20 ppm R2, risque de pénétration percutanée
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#### **123-86-4 acétate de n-butyle**

<b>VLEP</b>	Valeur momentanée: 940 mg/m <sup>3</sup> , 200 ppm Valeur à long terme: 710 mg/m <sup>3</sup> , 150 ppm
-------------	--

#### **67-64-1 acétone**

<b>VLEP</b>	Valeur momentanée: 2420 mg/m <sup>3</sup> , 1000 ppm Valeur à long terme: 1210 mg/m <sup>3</sup> , 500 ppm
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#### **64-17-5 éthanol**

<b>VLEP</b>	Valeur momentanée: 9500 mg/m <sup>3</sup> , 5000 ppm Valeur à long terme: 1900 mg/m <sup>3</sup> , 1000 ppm
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#### **110-19-0 acétate d'isobutyle**

<b>VLEP</b>	Valeur momentanée: 940 mg/m <sup>3</sup> , 200 ppm Valeur à long terme: 710 mg/m <sup>3</sup> , 150 ppm
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#### **110-43-0 heptane-2-one**

<b>VLEP</b>	Valeur momentanée: 475 mg/m <sup>3</sup> , 100 ppm Valeur à long terme: 238 mg/m <sup>3</sup> , 50 ppm risque de pénétration percutanée
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# Fiche de données de sécurité

## selon 1907/2006/CE, Article 31

Date d'impression : 01.06.2022

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**Nom du produit: Conductive Silver Pen**

(suite de la page 4)

### 141-78-6 acétate d'éthyle

VLEP	Valeur momentanée: 1468 mg/m <sup>3</sup> , 400 ppm Valeur à long terme: 734 mg/m <sup>3</sup> , 200 ppm
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· **Remarques supplémentaires:**

Le présent document s'appuie sur les listes en vigueur au moment de son élaboration.

· **8.2 Contrôles de l'exposition**

· **Equipement de protection individuel:**

· **Mesures générales de protection et d'hygiène:**

Tenir à l'écart des produits alimentaires, des boissons et de la nourriture pour animaux.

Retirer immédiatement les vêtements souillés ou humectés.

Se laver les mains avant les pauses et en fin de travail.

Eviter tout contact avec la peau.

Eviter tout contact avec les yeux et avec la peau.

· **Protection respiratoire:**

En cas d'exposition faible ou de courte durée, utiliser un filtre respiratoire; en cas d'exposition intense ou durable, utiliser un appareil de respiration indépendant de l'air ambiant.

· **Protection des mains:**



Gants de protection

Le matériau des gants doit être imperméable et résistant au produit / à la substance / à la préparation.

À cause du manque de tests, aucune recommandation pour un matériau de gants pour le produit / la préparation / le mélange de produits chimiques ne peut être donnée.

Choix du matériau des gants en fonction des temps de pénétration, du taux de perméabilité et de la dégradation.

· **Matériau des gants**

Le choix de gants appropriés dépend non seulement du matériau, mais aussi d'autres critères de qualité qui peuvent varier d'un fabricant à l'autre. Puisque le produit représente une préparation composée de plusieurs substances, la résistance des matériaux des gants ne peut pas être calculée à l'avance et doit, alors, être contrôlée avant l'utilisation.

· **Temps de pénétration du matériau des gants**

Le temps de pénétration exact est à déterminer par le fabricant des gants de protection et à respecter.

· **Protection des yeux:**



Lunettes de protection hermétiques

## RUBRIQUE 9: Propriétés physiques et chimiques

· **9.1 Informations sur les propriétés physiques et chimiques essentielles**

· **Indications générales**

· **Aspect:**

Forme: Liquide

Couleur: Gris

· **Odeur:** Sucrée

· **Seuil olfactif:** Non déterminé.

· **valeur du pH:** Non déterminé.

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· <b>Changement d'état</b> Point de fusion/point de congélation:	Non déterminé.
Point initial d'ébullition et intervalle d'ébullition:	126 °C
· <b>Point d'éclair</b>	24 °C
· <b>Inflammabilité (solide, gaz):</b>	Non applicable.
· <b>Température d'inflammation:</b>	370 °C
· <b>Température de décomposition:</b>	Non déterminé.
· <b>Température d'auto-inflammabilité:</b>	Le produit ne s'enflamme pas spontanément.
· <b>Propriétés explosives:</b>	Le produit n'est pas explosif; toutefois, des mélanges explosifs vapeur-air peuvent se former.
· <b>Limites d'explosion:</b> Inférieure:	1,2 Vol %
Supérieure:	7 Vol %
· <b>Pression de vapeur à 20 °C:</b>	6,7 hPa
· <b>Densité à 20 °C:</b>	2 g/cm <sup>3</sup>
· <b>Densité relative</b>	Non déterminé.
· <b>Densité de vapeur:</b>	Non déterminé.
· <b>Taux d'évaporation:</b>	Non déterminé.
· <b>Solubilité dans/miscibilité avec l'eau:</b>	Pas ou peu miscible
· <b>Coefficient de partage: n-octanol/eau:</b>	Non déterminé.
· <b>Viscosité:</b> Dynamique:	Non déterminé.
Cinématique:	Non déterminé.
· <b>Teneur en solvants:</b> Solvants organiques:	31,1 %
VOC (CE)	31,10 %
<b>Teneur en substances solides:</b>	45,8 %
· <b>9.2 Autres informations</b>	Pas d'autres informations importantes disponibles.

### RUBRIQUE 10: Stabilité et réactivité

- **10.1 Réactivité** Pas d'autres informations importantes disponibles.
- **10.2 Stabilité chimique**
- **Décomposition thermique/conditions à éviter:** Pas de décomposition en cas d'usage conforme.
- **10.3 Possibilité de réactions dangereuses** Aucune réaction dangereuse connue.
- **10.4 Conditions à éviter** Pas d'autres informations importantes disponibles.
- **10.5 Matières incompatibles:** Pas d'autres informations importantes disponibles.
- **10.6 Produits de décomposition dangereux:** Pas de produits de décomposition dangereux connus

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### RUBRIQUE 11: Informations toxicologiques

- **11.1 Informations sur les effets toxicologiques**
- **Toxicité aiguë** Compte tenu des données disponibles, les critères de classification ne sont pas remplis.

- **Valeurs LD/LC50 déterminantes pour la classification:**

#### 108-88-3 toluène

Oral	LD50	5.000 mg/kg (rat)
Dermique	LD50	12.124 mg/kg (lapin)
Inhalatoire	LC50/4 h	5.320 mg/l (souris)

- **Effet primaire d'irritation:**
- **Corrosion cutanée/irritation cutanée**  
Provoque une irritation cutanée.
- **Lésions oculaires graves/irritation oculaire**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Sensibilisation respiratoire ou cutanée**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Indications toxicologiques complémentaires:**
- **Effets CMR (cancérogène, mutagène et toxique pour la reproduction)**
- **Mutagénicité sur les cellules germinales**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Cancérogénicité** Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Toxicité pour la reproduction**  
Susceptible de nuire au fœtus.
- **Toxicité spécifique pour certains organes cibles - exposition unique**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Toxicité spécifique pour certains organes cibles - exposition répétée**  
Risque présumé d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.
- **Danger par aspiration**  
Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.

### RUBRIQUE 12: Informations écologiques

- **12.1 Toxicité**
- **Toxicité aquatique:** Pas d'autres informations importantes disponibles.
- **12.2 Persistance et dégradabilité** Pas d'autres informations importantes disponibles.
- **12.3 Potentiel de bioaccumulation** Pas d'autres informations importantes disponibles.
- **12.4 Mobilité dans le sol** Pas d'autres informations importantes disponibles.
- **Autres indications écologiques:**
- **Indications générales:**  
Catégorie de pollution des eaux 1 (D) (Classification propre): peu polluant  
Ne pas laisser le produit, non dilué ou en grande quantité, pénétrer la nappe phréatique, les eaux ou les canalisations.
- **12.5 Résultats des évaluations PBT et VPVB**
- **PBT:** Non applicable.
- **vPvB:** Non applicable.
- **12.6 Autres effets néfastes** Pas d'autres informations importantes disponibles.

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### RUBRIQUE 13: Considérations relatives à l'élimination

- **13.1 Méthodes de traitement des déchets**
- **Recommandation:** Ne doit pas être évacué avec les ordures ménagères. Ne pas laisser pénétrer dans les égouts.
- **Emballages non nettoyés:**
- **Recommandation:** Evacuation conformément aux prescriptions légales.

### RUBRIQUE 14: Informations relatives au transport

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>· <b>14.1 Numéro ONU</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <p style="margin: 0;">UNI263</p>   |
| <ul style="list-style-type: none"> <li>· <b>14.2 Désignation officielle de transport de l'ONU</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG</b></li> <li>· <b>IATA</b></li> </ul>  | <p style="margin: 0;">1263 PEINTURES<br/>PAINT, MARINE POLLUTANT<br/>PAINT</p>   |
| <ul style="list-style-type: none"> <li>· <b>14.3 Classe(s) de danger pour le transport</b></li> <li>· <b>ADR, IMDG</b></li> </ul>   | <div style="display: flex; align-items: center; gap: 10px;">   </div> <p style="margin: 0;">3 Liquides inflammables.<br/>3</p> |
| <ul style="list-style-type: none"> <li>· <b>IATA</b></li> </ul>   | <div style="display: flex; align-items: center; gap: 10px;">  </div> <p style="margin: 0;">3 Liquides inflammables.<br/>3</p>   |
| <ul style="list-style-type: none"> <li>· <b>14.4 Groupe d'emballage</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <p style="margin: 0;">III</p>  |
| <ul style="list-style-type: none"> <li>· <b>14.5 Dangers pour l'environnement:</b></li> <li>· <b>Marine Pollutant:</b></li> <li>· <b>Marquage spécial (ADR):</b></li> </ul>   | <p style="margin: 0;">Signe conventionnel (poisson et arbre)<br/>Signe conventionnel (poisson et arbre)</p>  |
| <ul style="list-style-type: none"> <li>· <b>14.6 Précautions particulières à prendre par l'utilisateur</b></li> <li>· <b>Numéro d'identification du danger (Indice Kemler):</b></li> <li>· <b>No EMS:</b></li> <li>· <b>Stowage Category</b></li> </ul> | <p style="margin: 0;">Attention: Liquides inflammables.<br/>30<br/>F-E,S-E<br/>A</p>   |
| <ul style="list-style-type: none"> <li>· <b>14.7 Transport en vrac conformément à l'annexe II de la convention Marpol et au recueil IBC</b></li> </ul>  | <p style="margin: 0;">Non applicable.</p>  |

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· **Indications complémentaires de transport:**· **ADR**· **Quantités limitées (LQ)**

5L

· **Quantités exceptées (EQ)**

Code: E1

Quantité maximale nette par emballage intérieur: 30 ml  
Quantité maximale nette par emballage extérieur: 1000 ml· **Catégorie de transport**

3

· **Code de restriction en tunnels**

D/E

· **IMDG**· **Limited quantities (LQ)**

5L

· **Excepted quantities (EQ)**

Code: E1

Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml· **"Règlement type" de l'ONU:**

UN 1263 PEINTURES, 3, III

### RUBRIQUE 15: Informations relatives à la réglementation

· **15.1 Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement**· **Directive 2012/18/UE**· **Substances dangereuses désignées - ANNEXE I** Aucun des composants n'est compris.· **Catégorie SEVESO P5c LIQUIDES INFLAMMABLES**· **Quantité seuil (tonnes) pour l'application des exigences relatives au seuil bas** 5.000 t· **Quantité seuil (tonnes) pour l'application des exigences relatives au seuil haut** 50.000 t· **RÈGLEMENT (CE) N° 1907/2006 ANNEXE XVII** Conditions de limitation: 3, 48· **Directive 2011/65/UE relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques – Annexe II**

Aucun des composants n'est compris.

· **RÈGLEMENT (UE) 2019/1148**· **Annexe I - PRÉCURSEURS D'EXPLOSIFS FAISANT L'OBJET DE RESTRICTIONS (Valeur limite maximale aux fins de l'octroi d'une licence en vertu de l'article 5, paragraphe 3)**

Aucun des composants n'est compris.

· **Annexe II - PRÉCURSEURS D'EXPLOSIFS DEVANT FAIRE L'OBJET D'UN SIGNALLEMENT**

67-64-1 | acétone

· **Règlement (CE) n° 273/2004 relatif aux précurseurs de drogues**

108-88-3 | toluène

3

67-64-1 | acétone

3

· **Règlement (CE) n° 111/2005 fixant des règles pour la surveillance du commerce des précurseurs des drogues entre la Communauté et les pays tiers**

108-88-3 | toluène

3

67-64-1 | acétone

3

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**Nom du produit: Conductive Silver Pen**

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- **Prescriptions nationales:**
- **Autres prescriptions, restrictions et règlements d'interdiction**

· **Substances extrêmement préoccupantes (SVHC) selon REACH, article 57**

67-64-1	acétone
64-17-5	éthanol

- **15.2 Évaluation de la sécurité chimique:** Une évaluation de la sécurité chimique n'a pas été réalisée.

### RUBRIQUE 16: Autres informations

Ces indications sont fondées sur l'état actuel de nos connaissances, mais ne constituent pas une garantie quant aux propriétés du produit et ne donnent pas lieu à un rapport juridique contractuel.

· **Phrases importantes**

- H225 Liquide et vapeurs très inflammables.
- H226 Liquide et vapeurs inflammables.
- H302 Nocif en cas d'ingestion.
- H304 Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.
- H315 Provoque une irritation cutanée.
- H319 Provoque une sévère irritation des yeux.
- H332 Nocif par inhalation.
- H336 Peut provoquer somnolence ou vertiges.
- H361d Susceptible de nuire au fœtus.
- H373 Risque présumé d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.

· **Acronymes et abréviations:**

- ADR: Accord relatif au transport international des marchandises dangereuses par route
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- VOC: Volatile Organic Compounds (USA, EU)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- PBT: Persistent, Bioaccumulative and Toxic
- SVHC: Substances of Very High Concern
- vPvB: very Persistent and very Bioaccumulative
- Flam. Liq. 2: Liquides inflammables – Catégorie 2
- Flam. Liq. 3: Liquides inflammables – Catégorie 3
- Acute Tox. 4: Toxicité aiguë – Catégorie 4
- Skin Irrit. 2: Corrosion cutanée/irritation cutanée – Catégorie 2
- Eye Irrit. 2: Lésions oculaires graves/irritation oculaire – Catégorie 2
- Repr. 2: Toxicité pour la reproduction – Catégorie 2
- STOT SE 3: Toxicité spécifique pour certains organes cibles (exposition unique) – Catégorie 3
- STOT RE 2: Toxicité spécifique pour certains organes cibles (exposition répétée) – Catégorie 2
- Asp. Tox. 1: Danger par aspiration – Catégorie 1



# Sicherheitsdatenblatt

## gemäß 1907/2006/EG, Artikel 31

Druckdatum: 01.06.2022

überarbeitet am: 01.06.2022

### ABSCHNITT 1: Bezeichnung des Stoffs beziehungsweise des Gemischs und des Unternehmens

- **1.1 Produktidentifikator**
- **Handelsname:** Conductive Silver Pen
- **Artikelnummer:** 12644-01, 12644-02
- **UFI:** W7P0-6083-P00T-7CJA
- **1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird**  
Keine weiteren relevanten Informationen verfügbar.
- **Verwendung des Stoffes / des Gemisches** Laborchemikalien
- **1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt**
- **Hersteller/Lieferant:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkcck@aol.com  
www.emsdiasum.com  
  
Science Services GmbH  
Unterhachinger Str. 75  
81737 München Germany  
  
Tel: +49(0)89 18 93 668-0  
safety@scienceservices.de  
  
Deutschland: +49 (0)89 19240, 24h Giftnotruf Munchen, www.toxinfo.org  
Osterreich: +43 1406 43 43, Gesundheit Osterreich GmbH, 24 h
- **Auskunftgebender Bereich:** Product safety department
- **1.4 Notrufnummer:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

### ABSCHNITT 2: Mögliche Gefahren

- **2.1 Einstufung des Stoffs oder Gemischs**
- **Einstufung gemäß Verordnung (EG) Nr. 1272/2008**



GHS02 Flamme

Flam. Liq. 3 H226 Flüssigkeit und Dampf entzündbar.



GHS08 Gesundheitsgefahr

Repr. 2 H361d Kann vermutlich das Kind im Mutterleib schädigen.

STOT RE 2 H373 Kann die Organe schädigen bei längerer oder wiederholter Exposition.

Asp. Tox. 1 H304 Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.



GHS07

(Fortsetzung auf Seite 2)

# Sicherheitsdatenblatt

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**Handelsname:** Conductive Silver Pen

(Fortsetzung von Seite 1)

Skin Irrit. 2 H315 Verursacht Hautreizungen.

· **2.2 Kennzeichnungselemente**· **Kennzeichnung gemäß Verordnung (EG) Nr. 1272/2008**

Das Produkt ist gemäß CLP-Verordnung eingestuft und gekennzeichnet.

· **Gefahrenpiktogramme**

GHS02 GHS07 GHS08

· **Signalwort** Gefahr· **Gefahrbestimmende Komponenten zur Etikettierung:**

Toluol

· **Gefahrenhinweise**

H226 Flüssigkeit und Dampf entzündbar.

H315 Verursacht Hautreizungen.

H361d Kann vermutlich das Kind im Mutterleib schädigen.

H373 Kann die Organe schädigen bei längerer oder wiederholter Exposition.

H304 Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.

· **Sicherheitshinweise**

P301+P310 BEI VERSCHLUCKEN: Sofort GIFTINFORMATIONSZENTRUM/Arzt anrufen.

P321 Besondere Behandlung (siehe auf diesem Kennzeichnungsetikett).

P331 KEIN Erbrechen herbeiführen.

P303+P361+P353 BEI BERÜHRUNG MIT DER HAUT (oder dem Haar): Alle kontaminierten Kleidungsstücke sofort ausziehen. Haut mit Wasser abwaschen [oder duschen].

P362+P364 Kontaminierte Kleidung ausziehen und vor erneutem Tragen waschen.

P405 Unter Verschluss aufbewahren.

P501 Entsorgung des Inhalts / des Behälters gemäß den örtlichen / regionalen / nationalen / internationalen Vorschriften.

· **Zusätzliche Angaben:**

Das Produkt enthält: Meldepflichtige Ausgangsstoffe für Explosivstoffe. Bereitstellung, Verbringung, Besitz und Verwendung gemäß Verordnung (EU) 2019/1148, Artikel 9.

· **2.3 Sonstige Gefahren**· **Ergebnisse der PBT- und vPvB-Beurteilung**· **PBT:** Nicht anwendbar.· **vPvB:** Nicht anwendbar.

### ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen

· **3.2 Chemische Charakterisierung: Gemische**· **Beschreibung:** Gemisch aus nachfolgend angeführten Stoffen mit ungefährlichen Beimengungen.· **Gefährliche Inhaltsstoffe:**

CAS: 108-88-3 EINECS: 203-625-9	Toluol ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	n-Butylacetat ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	Aceton ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%

(Fortsetzung auf Seite 3)

# Sicherheitsdatenblatt

## gemäß 1907/2006/EG, Artikel 31

Druckdatum: 01.06.2022

überarbeitet am: 01.06.2022

**Handelsname: Conductive Silver Pen**

(Fortsetzung von Seite 2)

CAS: 64-17-5 EINECS: 200-578-6	Ethanol ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-19-0 EINECS: 203-745-1	Isobutylacetat ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-43-0 EINECS: 203-767-1	Heptan-2-on ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; ⚠ Acute Tox. 4, H332	≤2,5%
CAS: 141-78-6 EINECS: 205-500-4	Ethylacetat ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	≤2,5%
· <b>SVHC</b>		
67-64-1	Aceton	
64-17-5	Ethanol	

· **Zusätzliche Hinweise:** Der Wortlaut der angeführten Gefahrenhinweise ist dem Abschnitt 16 zu entnehmen.

### ABSCHNITT 4: Erste-Hilfe-Maßnahmen

#### · 4.1 Beschreibung der Erste-Hilfe-Maßnahmen

##### · **Allgemeine Hinweise:**

Vergiftungssymptome können erst nach vielen Stunden auftreten, deshalb ärztliche Überwachung mindestens 48 Stunden nach einem Unfall.

##### · **Nach Einatmen:**

Frischlufzufuhr, gegebenenfalls Atemspende, Wärme. Bei anhaltenden Beschwerden Arzt konsultieren.  
Bei Bewusstlosigkeit Lagerung und Transport in stabiler Seitenlage.

##### · **Nach Hautkontakt:** Sofort mit Wasser und Seife abwaschen und gut nachspülen.

##### · **Nach Augenkontakt:** Augen bei geöffnetem Lidspalt mehrere Minuten mit fließendem Wasser spülen.

##### · **Nach Verschlucken:** Bei anhaltenden Beschwerden Arzt konsultieren.

#### · 4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen

Keine weiteren relevanten Informationen verfügbar.

#### · 4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung

Keine weiteren relevanten Informationen verfügbar.

### ABSCHNITT 5: Maßnahmen zur Brandbekämpfung

#### · 5.1 Löschmittel

· **Geeignete Löschmittel:** CO<sub>2</sub>, Sand, Löschpulver. Kein Wasser verwenden.

· **Aus Sicherheitsgründen ungeeignete Löschmittel:** Wasser im Vollstrahl

#### · 5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren

Keine weiteren relevanten Informationen verfügbar.

#### · 5.3 Hinweise für die Brandbekämpfung

· **Besondere Schutzausrüstung:** Atemschutzgerät anlegen.

### ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung

· **6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren**  
Schutzausrüstung tragen. Ungeschützte Personen fernhalten.

· **6.2 Umweltschutzmaßnahmen:** Nicht in die Kanalisation/Oberflächenwasser/Grundwasser gelangen lassen.

#### · 6.3 Methoden und Material für Rückhaltung und Reinigung:

Mit flüssigkeitsbindendem Material (Sand, Kieselgur, Säurebinder, Universalbinder, Sägemehl) aufnehmen.  
Kontaminiertes Material als Abfall nach Abschnitt 13 entsorgen.

Für ausreichende Lüftung sorgen.

(Fortsetzung auf Seite 4)

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Nicht mit Wasser oder wässrigen Reinigungsmitteln wegspülen.

· **6.4 Verweis auf andere Abschnitte**

Informationen zur sicheren Handhabung siehe Abschnitt 7.

Informationen zur persönlichen Schutzausrüstung siehe Abschnitt 8.

Informationen zur Entsorgung siehe Abschnitt 13.

### ABSCHNITT 7: Handhabung und Lagerung

· **7.1 Schutzmaßnahmen zur sicheren Handhabung**

Für gute Belüftung/Absaugung am Arbeitsplatz sorgen.

Aerosolbildung vermeiden.

· **Hinweise zum Brand- und Explosionsschutz:**

Zündquellen fernhalten - nicht rauchen.

Vor Hitze schützen.

Maßnahmen gegen elektrostatische Aufladung treffen.

· **7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten**

· **Lagerung:**

· **Anforderung an Lagerräume und Behälter:** Keine besonderen Anforderungen.

· **Zusammenlagerungshinweise:** Nicht erforderlich.

· **Weitere Angaben zu den Lagerbedingungen:**

Behälter dicht geschlossen halten.

Vor Hitze und direkter Sonnenbestrahlung schützen.

· **Lagerklasse:**

· **Klassifizierung nach Betriebssicherheitsverordnung (BetrSichV):** Entzündbare Flüssigkeiten

· **7.3 Spezifische Endanwendungen** Keine weiteren relevanten Informationen verfügbar.

### ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen

· **8.1 Zu überwachende Parameter**

· **Zusätzliche Hinweise zur Gestaltung technischer Anlagen:** Keine weiteren Angaben, siehe Abschnitt 7.

· **Bestandteile mit arbeitsplatzbezogenen, zu überwachenden Grenzwerten:**

**108-88-3 Toluol**

AGW	Langzeitwert: 190 mg/m <sup>3</sup> , 50 ml/m <sup>3</sup> 2(II);DFG, EU, H, Y
-----	---

**123-86-4 n-Butylacetat**

AGW	Langzeitwert: 300 mg/m <sup>3</sup> , 62 ml/m <sup>3</sup> 2(I);AGS, Y
-----	---

**67-64-1 Aceton**

AGW	Langzeitwert: 1200 mg/m <sup>3</sup> , 500 ml/m <sup>3</sup> 2(I);AGS, DFG, EU, Y
-----	--

**64-17-5 Ethanol**

AGW	Langzeitwert: 380 mg/m <sup>3</sup> , 200 ml/m <sup>3</sup> 4(II);DFG, Y
-----	---

**110-19-0 Isobutylacetat**

AGW	Langzeitwert: 300 mg/m <sup>3</sup> , 62 ml/m <sup>3</sup> 2 (I);Y, AGS
-----	--

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**110-43-0 Heptan-2-on**

AGW Langzeitwert: 238 mg/m<sup>3</sup>  
2(I);EU, H

**141-78-6 Ethylacetat**

AGW Langzeitwert: 730 mg/m<sup>3</sup>, 200 ml/m<sup>3</sup>  
2(I);DFG, EU, Y

**Bestandteile mit biologischen Grenzwerten:****108-88-3 Toluol**

BGW 600 µg/l  
Untersuchungsmaterial: Vollblut  
Probennahmezeitpunkt: unmittelbar nach Exposition  
Parameter: Toluol

1,5 mg/l  
Untersuchungsmaterial: Urin  
Probennahmezeitpunkt: Expositionsende bzw. Schichtende, bei Langzeitexposition: am Schichtende nach mehreren vorangegangenen Schichten  
Parameter: o-Kresol (nach Hydrolyse)

75 µg/l  
Untersuchungsmaterial: Urin  
Probennahmezeitpunkt: Expositionsende bzw. Schichtende  
Parameter: Toluol

**67-64-1 Aceton**

BGW 80 mg/l  
Untersuchungsmaterial: Urin  
Probennahmezeitpunkt: Expositionsende bzw. Schichtende  
Parameter: Aceton

· **Zusätzliche Hinweise:** Als Grundlage dienen die bei der Erstellung gültigen Listen.

· **8.2 Begrenzung und Überwachung der Exposition**

· **Persönliche Schutzausrüstung:**

· **Allgemeine Schutz- und Hygienemaßnahmen:**

Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.

Beschmutzte, getränkte Kleidung sofort ausziehen.

Vor den Pausen und bei Arbeitsende Hände waschen.

Berührung mit der Haut vermeiden.

Berührung mit den Augen und der Haut vermeiden.

· **Atemschutz:**

Bei kurzzeitiger oder geringer Belastung Atemfiltergerät; bei intensiver bzw. längerer Exposition umluftunabhängiges Atemschutzgerät verwenden.

· **Handschutz:**



Schutzhandschuhe

Das Handschuhmaterial muss undurchlässig und beständig gegen das Produkt / den Stoff / die Zubereitung sein. Aufgrund fehlender Tests kann keine Empfehlung zum Handschuhmaterial für das Produkt / die Zubereitung / das Chemikaliengemisch abgegeben werden.

Auswahl des Handschuhmaterials unter Beachtung der Durchbruchzeiten, Permeationsraten und der Degradation.

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**· Handschuhmaterial**

Die Auswahl eines geeigneten Handschuhs ist nicht nur vom Material, sondern auch von weiteren Qualitätsmerkmalen abhängig und von Hersteller zu Hersteller unterschiedlich. Da das Produkt eine Zubereitung aus mehreren Stoffen darstellt, ist die Beständigkeit von Handschuhmaterialien nicht vorausberechenbar und muß deshalb vor dem Einsatz überprüft werden.

**· Durchdringungszeit des Handschuhmaterials**

Die genaue Durchbruchzeit ist beim Schutzhandschuhhersteller zu erfahren und einzuhalten.

**· Augenschutz:**

Dichtschließende Schutzbrille

### ABSCHNITT 9: Physikalische und chemische Eigenschaften

**· 9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften****· Allgemeine Angaben****· Aussehen:****Form:** Flüssigkeit**Farbe:** Grau**· Geruch:** Süßlich**· Geruchsschwelle:** Nicht bestimmt.**· pH-Wert:** Nicht bestimmt.**· Zustandsänderung****Schmelzpunkt/Gefrierpunkt:** Nicht bestimmt.**Siedebeginn und Siedebereich:** 126 °C**· Flammpunkt:** 24 °C**· Entzündbarkeit (fest, gasförmig):** Nicht anwendbar.**· Zündtemperatur:** 370 °C**· Zersetzungstemperatur:** Nicht bestimmt.**· Selbstentzündungstemperatur:** Das Produkt ist nicht selbstentzündlich.**· Explosive Eigenschaften:** Das Produkt ist nicht explosionsgefährlich, jedoch ist die Bildung explosionsgefährlicher Dampf-/Luftgemische möglich.**· Explosionsgrenzen:****Untere:** 1,2 Vol %**Obere:** 7 Vol %**· Dampfdruck bei 20 °C:** 6,7 hPa**· Dichte bei 20 °C:** 2 g/cm<sup>3</sup>**· Relative Dichte** Nicht bestimmt.**· Dampfdichte** Nicht bestimmt.**· Verdampfungsgeschwindigkeit** Nicht bestimmt.**· Löslichkeit in / Mischbarkeit mit****Wasser:** Nicht bzw. wenig mischbar.**· Verteilungskoeffizient: n-Octanol/Wasser:** Nicht bestimmt.

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· <b>Viskosität:</b>	
<b>Dynamisch:</b>	<i>Nicht bestimmt.</i>
<b>Kinematisch:</b>	<i>Nicht bestimmt.</i>
· <b>Lösemittelgehalt:</b>	
<b>Organische Lösemittel:</b>	<i>31,1 %</i>
<b>VOC (EU)</b>	<i>31,10 %</i>
<b>Festkörpergehalt:</b>	<i>45,8 %</i>
· <b>9.2 Sonstige Angaben</b>	<i>Keine weiteren relevanten Informationen verfügbar.</i>

### ABSCHNITT 10: Stabilität und Reaktivität

- **10.1 Reaktivität** *Keine weiteren relevanten Informationen verfügbar.*
- **10.2 Chemische Stabilität**
- **Thermische Zersetzung / zu vermeidende Bedingungen:**  
*Keine Zersetzung bei bestimmungsgemäßer Verwendung.*
- **10.3 Möglichkeit gefährlicher Reaktionen** *Keine gefährlichen Reaktionen bekannt.*
- **10.4 Zu vermeidende Bedingungen** *Keine weiteren relevanten Informationen verfügbar.*
- **10.5 Unverträgliche Materialien:** *Keine weiteren relevanten Informationen verfügbar.*
- **10.6 Gefährliche Zersetzungsprodukte:** *Keine gefährlichen Zersetzungsprodukte bekannt.*

### ABSCHNITT 11: Toxikologische Angaben

- **11.1 Angaben zu toxikologischen Wirkungen**
- **Akute Toxizität** *Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.*

· **Einstufungsrelevante LD/LC50-Werte:**

**108-88-3 Toluol**

Oral	LD50	5.000 mg/kg (rat)
Dermal	LD50	12.124 mg/kg (rabbit)
Inhalativ	LC50/4 h	5.320 mg/l (mouse)

- **Primäre Reizwirkung:**
- **Ätz-/Reizwirkung auf die Haut**  
*Verursacht Hautreizungen.*
- **Schwere Augenschädigung/-reizung** *Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.*
- **Sensibilisierung der Atemwege/Haut** *Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.*
- **Zusätzliche toxikologische Hinweise:**
- **CMR-Wirkungen (krebserzeugende, erbgutverändernde und fortpflanzungsgefährdende Wirkung)**
- **Keimzell-Mutagenität** *Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.*
- **Karzinogenität** *Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.*
- **Reproduktionstoxizität**  
*Kann vermutlich das Kind im Mutterleib schädigen.*
- **Spezifische Zielorgan-Toxizität bei einmaliger Exposition**  
*Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.*
- **Spezifische Zielorgan-Toxizität bei wiederholter Exposition**  
*Kann die Organe schädigen bei längerer oder wiederholter Exposition.*

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- **Aspirationsgefahr**  
Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.


### ABSCHNITT 12: Umweltbezogene Angaben

- **12.1 Toxizität**
- **Aquatische Toxizität:** Keine weiteren relevanten Informationen verfügbar.
- **12.2 Persistenz und Abbaubarkeit** Keine weiteren relevanten Informationen verfügbar.
- **12.3 Bioakkumulationspotenzial** Keine weiteren relevanten Informationen verfügbar.
- **12.4 Mobilität im Boden** Keine weiteren relevanten Informationen verfügbar.
- **Weitere ökologische Hinweise:**
- **Allgemeine Hinweise:**  
Wassergefährdungsklasse 1 (Selbsteinstufung): schwach wassergefährdend  
Nicht unverdünnt bzw. in größeren Mengen in das Grundwasser, in Gewässer oder in die Kanalisation gelangen lassen.
- **12.5 Ergebnisse der PBT- und vPvB-Beurteilung**
- **PBT:** Nicht anwendbar.
- **vPvB:** Nicht anwendbar.
- **12.6 Andere schädliche Wirkungen** Keine weiteren relevanten Informationen verfügbar.

### ABSCHNITT 13: Hinweise zur Entsorgung

- **13.1 Verfahren der Abfallbehandlung**
- **Empfehlung:** Darf nicht zusammen mit Hausmüll entsorgt werden. Nicht in die Kanalisation gelangen lassen.
- **Ungereinigte Verpackungen:**
- **Empfehlung:** Entsorgung gemäß den behördlichen Vorschriften.

### ABSCHNITT 14: Angaben zum Transport

- |   |                               |
|---|-------------------------------|
| · <b>14.1 UN-Nummer</b>   |                               |
| · <b>ADR, IMDG, IATA</b>  | UN1263                        |
| · <b>14.2 Ordnungsgemäße UN-Versandbezeichnung</b>                                  |                               |
| · <b>ADR</b>  | 1263 FARBE                    |
| · <b>IMDG</b>   | PAINT, MARINE POLLUTANT       |
| · <b>IATA</b>   | PAINT                         |
| · <b>14.3 Transportgefahrenklassen</b>  |                               |
| · <b>ADR, IMDG</b>  |                               |
|  |                               |
| · <b>Klasse</b>   | 3 Entzündbare flüssige Stoffe |
| · <b>Gefahrzettel</b>   | 3                             |

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· **IATA**

· **Class** 3 Entzündbare flüssige Stoffe  
 · **Label** 3

· **14.4 Verpackungsgruppe**  
 · **ADR, IMDG, IATA** III

· **14.5 Umweltgefahren:**  
 · **Marine pollutant:** Symbol (Fisch und Baum)  
 · **Besondere Kennzeichnung (ADR):** Symbol (Fisch und Baum)

· **14.6 Besondere Vorsichtsmaßnahmen für den Verwender** Achtung: Entzündbare flüssige Stoffe  
 · **Nummer zur Kennzeichnung der Gefahr (Kemler-Zahl):** 30  
 · **EMS-Nummer:** F-E,S-E  
 · **Stowage Category** A

· **14.7 Massengutbeförderung gemäß Anhang II des MARPOL-Übereinkommens und gemäß IBC-Code** Nicht anwendbar.

· **Transport/weitere Angaben:**

· **ADR**  
 · **Begrenzte Menge (LQ)** 5L  
 · **Freigestellte Mengen (EQ)** Code: E1  
 Höchste Nettomenge je Innenverpackung: 30 ml  
 Höchste Nettomenge je Außenverpackung: 1000 ml  
 · **Beförderungskategorie** 3  
 · **Tunnelbeschränkungscode** D/E

· **IMDG**  
 · **Limited quantities (LQ)** 5L  
 · **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 ml  
 Maximum net quantity per outer packaging: 1000 ml

· **UN "Model Regulation":** UN 1263 FARBE, 3, III

### ABSCHNITT 15: Rechtsvorschriften

· **15.1 Vorschriften zu Sicherheit, Gesundheits- und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch**

- Richtlinie 2012/18/EU
- Namentlich aufgeführte gefährliche Stoffe - ANHANG I Keiner der Inhaltsstoffe ist enthalten.
- Seveso-Kategorie P5c ENTZÜNDBARE FLÜSSIGKEITEN
- Mengenschwelle (in Tonnen) für die Anwendung in Betrieben der unteren Klasse 5.000 t
- Mengenschwelle (in Tonnen) für die Anwendung in Betrieben der oberen Klasse 50.000 t
- VERORDNUNG (EG) Nr. 1907/2006 ANHANG XVII Beschränkungsbedingungen: 3, 48

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· **Richtlinie 2011/65/EU zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten – Anhang II**

Keiner der Inhaltsstoffe ist enthalten.

· **VERORDNUNG (EU) 2019/1148**

· **Anhang I - BESCHRÄNKTE AUSGANGSSTOFFE FÜR EXPLOSIVSTOFFE (Oberer Konzentrationsgrenzwert für eine Genehmigung nach Artikel 5 Absatz 3)**

Keiner der Inhaltsstoffe ist enthalten.

· **Anhang II - MELDEPFLICHTIGE AUSGANGSSTOFFE FÜR EXPLOSIVSTOFFE**

67-64-1 Aceton

· **Verordnung (EG) Nr. 273/2004 betreffend Drogenausgangsstoffe**

108-88-3 Toluol

3

67-64-1 Aceton

3

· **Verordnung (EG) Nr. 111/2005 zur Festlegung von Vorschriften für die Überwachung des Handels mit Drogenaustauschstoffen zwischen der Gemeinschaft und Drittländern**

108-88-3 Toluol

3

67-64-1 Aceton

3

· **Nationale Vorschriften:**· **Technische Anleitung Luft:**

Klasse	Anteil in %
NK	31,1

· **Wassergefährdungsklasse: WGK 1 (Selbsteinstufung): schwach wassergefährdend.**· **Sonstige Vorschriften, Beschränkungen und Verbotsverordnungen**· **Besonders besorgniserregende Stoffe (SVHC) gemäß REACH, Artikel 57**

67-64-1 Aceton

64-17-5 Ethanol

· **15.2 Stoffsicherheitsbeurteilung: Eine Stoffsicherheitsbeurteilung wurde nicht durchgeführt.**

### ABSCHNITT 16: Sonstige Angaben

Die Angaben stützen sich auf den heutigen Stand unserer Kenntnisse, sie stellen jedoch keine Zusicherung von Produkteigenschaften dar und begründen kein vertragliches Rechtsverhältnis.

· **Relevante Sätze**

H225 Flüssigkeit und Dampf leicht entzündbar.

H226 Flüssigkeit und Dampf entzündbar.

H302 Gesundheitsschädlich bei Verschlucken.

H304 Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.

H315 Verursacht Hautreizungen.

H319 Verursacht schwere Augenreizung.

H332 Gesundheitsschädlich bei Einatmen.

H336 Kann Schläfrigkeit und Benommenheit verursachen.

H361d Kann vermutlich das Kind im Mutterleib schädigen.

H373 Kann die Organe schädigen bei längerer oder wiederholter Exposition.

· **Abkürzungen und Akronyme:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

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GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
VOC: Volatile Organic Compounds (USA, EU)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
vPvB: very Persistent and very Bioaccumulative  
Flam. Liq. 2: Entzündbare Flüssigkeiten – Kategorie 2  
Flam. Liq. 3: Entzündbare Flüssigkeiten – Kategorie 3  
Acute Tox. 4: Akute Toxizität – Kategorie 4  
Skin Irrit. 2: Hautreizende/-ätzende Wirkung – Kategorie 2  
Eye Irrit. 2: Schwere Augenschädigung/Augenreizung – Kategorie 2  
Repr. 2: Reproduktionstoxizität – Kategorie 2  
STOT SE 3: Spezifische Zielorgan-Toxizität (einmalige Exposition) – Kategorie 3  
STOT RE 2: Spezifische Zielorgan-Toxizität (wiederholte Exposition) – Kategorie 2  
Asp. Tox. 1: Aspirationsgefahr – Kategorie 1

DE

**Scheda di dati di sicurezza**  
ai sensi del regolamento 1907/2006/CE, Articolo 31

Stampato il: 01.06.2022

Revisione: 01.06.2022

### SEZIONE 1: Identificazione della sostanza o della miscela e della società/impresa

· **1.1 Identificatore del prodotto**

· **Denominazione commerciale:** Conductive Silver Pen

· **Articolo numero:** 12644-01, 12644-02

· **UFI:** W7P0-6083-P00T-7CJA

· **1.2 Usi identificati pertinenti della sostanza o della miscela e usi sconsigliati**  
Non sono disponibili altre informazioni.

· **Utilizzazione della Sostanza / del Preparato** Prodotti chimici per laboratorio

· **1.3 Informazioni sul fornitore della scheda di dati di sicurezza**

· **Produttore/fornitore:**

Electron Microscopy Sciences

1560 Industry Road

USA-Hatfield, PA 19440

Tel: 215-412-8400 Fax: 215-412-8450

email: sgkceck@aol.com

www.emsdiasum.com

Societa Italiana Chimici

Via Rio Nell Ellba 140

00138 Rome, Italy

Tel: 39 06 8800211

Fax: 39 30 06 8815313

Web: www.sichim.com

· **Informazioni fornite da:** Product safety department

· **1.4 Numero telefonico di emergenza:**

ChemTrec 1-800-424-9300 Contract CCN7661

1-703-527-3887

### SEZIONE 2: Identificazione dei pericoli

· **2.1 Classificazione della sostanza o della miscela**

· **Classificazione secondo il regolamento (CE) n. 1272/2008**



GHS02 fiamma

Flam. Liq. 3 H226 Liquido e vapori infiammabili.



GHS08 pericolo per la salute

Repr. 2 H361d Sospettato di nuocere al feto.

STOT RE 2 H373 Può provocare danni agli organi in caso di esposizione prolungata o ripetuta.

Asp. Tox. 1 H304 Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.



GHS07

Skin Irrit. 2 H315 Provoca irritazione cutanea.

· **2.2 Elementi dell'etichetta**

· **Etichettatura secondo il regolamento (CE) n. 1272/2008**

Il prodotto è classificato ed etichettato conformemente al regolamento CLP.

(continua a pagina 2)

# Scheda di dati di sicurezza

## ai sensi del regolamento 1907/2006/CE, Articolo 31

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**Denominazione commerciale: Conductive Silver Pen**

(Segue da pagina 1)

**Pittogrammi di pericolo**

GHS02 GHS07 GHS08

**Avvertenza Pericolo****Componenti pericolosi che ne determinano l'etichettatura:**

toluene

**Indicazioni di pericolo**

H226 Liquido e vapori infiammabili.

H315 Provoca irritazione cutanea.

H361d Sospettato di nuocere al feto.

H373 Può provocare danni agli organi in caso di esposizione prolungata o ripetuta.

H304 Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.

**Consigli di prudenza**P301+P310 **IN CASO DI INGESTIONE:** contattare immediatamente un CENTRO ANTIVELENI/un medico.

P321 Trattamento specifico (vedere su questa etichetta).

P331 NON provocare il vomito.

P303+P361+P353 **IN CASO DI CONTATTO CON LA PELLE (o con i capelli):** togliersi di dosso immediatamente tutti gli indumenti contaminati. Sciacquare la pelle [o fare una doccia].

P362+P364 Togliere tutti gli indumenti contaminati e lavarli prima di indossarli nuovamente.

P405 Conservare sotto chiave.

P501 Smaltire il prodotto/recipiente in conformità con le disposizioni locali / regionali / nazionali / internazionali.

**Ulteriori dati:**

Il prodotto contiene: Precursori di esplosivi soggetti a segnalazione. Messa a disposizione, introduzione, detenzione e uso ai sensi del regolamento (UE) 2019/1148, articolo 9.

**2.3 Altri pericoli****Risultati della valutazione PBT e vPvB**

PBT: Non applicabile.

vPvB: Non applicabile.

### SEZIONE 3: Composizione/informazioni sugli ingredienti

**3.2 Caratteristiche chimiche: Miscela****Descrizione:** Miscela delle seguenti sostanze con additivi non pericolosi.**Sostanze pericolose:**

CAS: 108-88-3 EINECS: 203-625-9	toluene ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	acetato di n-butile ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	acetone ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	etanolo ⚠ Flam. Liq. 2, H225	≤2,5%

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CAS: 110-19-0	acetato di isobutile	≤2,5%
EINECS: 203-745-1	⚠ Flam. Liq. 2, H225	
CAS: 110-43-0	eptan-2-one	≤2,5%
EINECS: 203-767-1	⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; ⚠ Acute Tox. 4, H332	
CAS: 141-78-6	acetato di etile	≤2,5%
EINECS: 205-500-4	⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	
· <b>SVHC</b>		
67-64-1	acetone	
64-17-5	etanolo	

· **Ulteriori indicazioni:** Il testo dell'avvertenza dei pericoli citati può essere appreso dal capitolo 16**SEZIONE 4: Misure di primo soccorso**· **4.1 Descrizione delle misure di primo soccorso**· **Indicazioni generali:**

I sintomi di avvelenamento possono comparire dopo molte ore, per tale motivo è necessaria la sorveglianza di un medico nelle 48 ore successive all'incidente.

· **Inalazione:**

Portare in zona ben areata, praticare eventualmente la respirazione artificiale, tenere al caldo. Se i disturbi persistono consultare il medico.

Se il soggetto è svenuto provvedere a tenerlo durante il trasporto in posizione stabile su un fianco.

· **Contatto con la pelle:** Lavare immediatamente con acqua e sapone sciacquando accuratamente.· **Contatto con gli occhi:** Lavare con acqua corrente per alcuni minuti tenendo le palpebre ben aperte.· **Ingestione:** Se il dolore persiste consultare il medico.· **4.2 Principali sintomi ed effetti, sia acuti che ritardati** Non sono disponibili altre informazioni.· **4.3 Indicazione dell'eventuale necessità di consultare immediatamente un medico e di trattamenti speciali**

Non sono disponibili altre informazioni.

**SEZIONE 5: Misure antincendio**· **5.1 Mezzi di estinzione**· **Mezzi di estinzione idonei:** CO<sub>2</sub>, sabbia, polvere. Non usare acqua.· **Mezzi di estinzione inadatti per motivi di sicurezza:** Getti d'acqua· **5.2 Pericoli speciali derivanti dalla sostanza o dalla miscela** Non sono disponibili altre informazioni.· **5.3 Raccomandazioni per gli addetti all'estinzione degli incendi**· **Mezzi protettivi specifici:** Indossare il respiratore.**SEZIONE 6: Misure in caso di rilascio accidentale**· **6.1 Precauzioni personali, dispositivi di protezione e procedure in caso di emergenza**

Indossare equipaggiamento protettivo. Allontanare le persone non equipaggiate.

· **6.2 Precauzioni ambientali:** Impedire infiltrazioni nella fognatura/nelle acque superficiali/nelle acque freatiche.· **6.3 Metodi e materiali per il contenimento e per la bonifica:**

Raccogliere il liquido con materiale assorbente (sabbia, tripoli, legante di acidi, legante universale, segatura).

Smaltimento del materiale contaminato conformemente al punto 13.

Provvedere ad una sufficiente areazione.

Non dilavare con acqua o detersivi liquidi.

· **6.4 Riferimento ad altre sezioni**

Per informazioni relative ad una manipolazione sicura, vedere capitolo 7.

Per informazioni relative all'equipaggiamento protettivo ad uso personale vedere Capitolo 8.

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Per informazioni relative allo smaltimento vedere Capitolo 13.

**SEZIONE 7: Manipolazione e immagazzinamento**

- **7.1 Precauzioni per la manipolazione sicura**  
Accurata ventilazione/aspirazione nei luoghi di lavoro.  
Evitare la formazione di aerosol.
- **Indicazioni in caso di incendio ed esplosione:**  
Tenere lontano da fonti di calore, non fumare.  
Proteggere dal calore.  
Adottare provvedimenti contro cariche elettrostatiche.
- **7.2 Condizioni per lo stoccaggio sicuro, comprese eventuali incompatibilità**
- **Stoccaggio:**
- **Requisiti dei magazzini e dei recipienti:** Non sono richiesti requisiti particolari.
- **Indicazioni sullo stoccaggio misto:** Non necessario.
- **Ulteriori indicazioni relative alle condizioni di immagazzinamento:**  
Mantenere i recipienti ermeticamente chiusi.  
Proteggere dal calore e dai raggi diretti del sole.
- **7.3 Usi finali particolari** Non sono disponibili altre informazioni.

**SEZIONE 8: Controllo dell'esposizione/protezione individuale**

- **8.1 Parametri di controllo**
- **Ulteriori indicazioni sulla struttura di impianti tecnici:** Nessun dato ulteriore, vedere punto 7.

· **Componenti i cui valori limite devono essere tenuti sotto controllo negli ambienti di lavoro:****108-88-3 toluene**TWA Valore a lungo termine: 75,4 mg/m<sup>3</sup>, 20 ppm  
A4, IBEVL Valore a lungo termine: 192 mg/m<sup>3</sup>, 50 ppm  
Cute**123-86-4 acetato di n-butile**TWA Valore a breve termine: 950 mg/m<sup>3</sup>, 200 ppm  
Valore a lungo termine: 713 mg/m<sup>3</sup>, 150 ppmVL Valore a breve termine: 723 mg/m<sup>3</sup>, 150 ppm  
Valore a lungo termine: 241 mg/m<sup>3</sup>, 50 ppm**67-64-1 acetone**TWA Valore a breve termine: 1781 mg/m<sup>3</sup>, (750) ppm  
Valore a lungo termine: 1187 mg/m<sup>3</sup>, (500) ppm  
A4, IBEVL Valore a lungo termine: 1210 mg/m<sup>3</sup>, 500 ppm**64-17-5 etanolo**TWA Valore a breve termine: 1884 mg/m<sup>3</sup>, 1000 ppm  
A3**110-19-0 acetato di isobutile**TWA Valore a lungo termine: 713 mg/m<sup>3</sup>, 150 ppmVL Valore a breve termine: 723 mg/m<sup>3</sup>, 150 ppm  
Valore a lungo termine: 241 mg/m<sup>3</sup>, 50 ppm

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**110-43-0 eptan-2-one**TWA Valore a lungo termine: 233 mg/m<sup>3</sup>, 50 ppmVL Valore a breve termine: 475 mg/m<sup>3</sup>, 100 ppm  
Valore a lungo termine: 238 mg/m<sup>3</sup>, 50 ppm  
Cute**141-78-6 acetato di etile**TWA Valore a lungo termine: 1441 mg/m<sup>3</sup>, 400 ppmVL Valore a breve termine: 1468 mg/m<sup>3</sup>, 400 ppm  
Valore a lungo termine: 734 mg/m<sup>3</sup>, 200 ppm**· Componenti con valori limite biologici:****108-88-3 toluene**

IBE 0,02 mg/l

Campioni: sangue

Momento del prelievo: a prima ultimo turno settimana lavorativa

Indicatore biologico: toluene

0,03 mg/l

Campioni: urine

Momento del prelievo: a fine turno

Indicatore biologico: toluene

0,3 mg/g creatinina

Campioni: urine

Momento del prelievo: a fine turno

Indicatore biologico: o-cresolo

**67-64-1 acetone**

IBE 50 mg/l

Campioni: urine

Momento del prelievo: a fine turno

Indicatore biologico: acetone

**· Ulteriori indicazioni:** Le liste valide alla data di compilazione sono state usate come base.**· 8.2 Controlli dell'esposizione****· Mezzi protettivi individuali:****· Norme generali protettive e di igiene del lavoro:**

Tenere lontano da cibo, bevande e foraggi.

Togliere immediatamente gli abiti contaminati.

Lavarsi le mani prima dell'intervallo o a lavoro terminato.

Evitare il contatto con la pelle.

Evitare il contatto con gli occhi e la pelle.

**· Maschera protettiva:**

Nelle esposizioni brevi e minime utilizzare la maschera; nelle esposizioni più intense e durature indossare l'autorespiratore.

**· Guanti protettivi:**

Guanti protettivi

Il materiale dei guanti deve essere impermeabile e stabile contro il prodotto/ la sostanza/ la formulazione.

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A causa della mancanza di tests non può essere consigliato alcun tipo di materiale per i guanti con cui manipolare il prodotto / la formulazione / la miscela di sostanze chimiche.

Scelta del materiale dei guanti in considerazione dei tempi di passaggio, dei tassi di permeazione e della degradazione.

· **Materiale dei guanti**

La scelta dei guanti adatti non dipende soltanto dal materiale bensì anche da altre caratteristiche di qualità variabili da un produttore a un altro. Poiché il prodotto rappresenta una formulazione di più sostanze, la stabilità dei materiali dei guanti non è calcolabile in anticipo e deve essere testata prima dell'impiego

· **Tempo di permeazione del materiale dei guanti**

Richiedere dal fornitore dei guanti il tempo di passaggio preciso il quale deve essere rispettato.

· **Occhiali protettivi:**



Occhiali protettivi a tenuta

### SEZIONE 9: Proprietà fisiche e chimiche

· **9.1 Informazioni sulle proprietà fisiche e chimiche fondamentali**

· **Indicazioni generali**

· **Aspetto:**

· **Forma:** Liquido

· **Colore:** Grigio

· **Odore:** Dolciastro

· **Soglia olfattiva:** Non definito.

· **valori di pH:** Non definito.

· **Cambiamento di stato**

· **Punto di fusione/punto di congelamento:** Non definito.

· **Punto di ebollizione iniziale e intervallo di ebollizione:** 126 °C

· **Punto di infiammabilità:** 24 °C

· **Infiammabilità (solidi, gas):** Non applicabile.

· **Temperatura di accensione:** 370 °C

· **Temperatura di decomposizione:** Non definito.

· **Temperatura di autoaccensione:** Prodotto non autoinfiammabile.

· **Proprietà esplosive:** Prodotto non è esplosivo, è tuttavia possibile la formazione di miscele di vapori/aria esplosive.

· **Limiti di infiammabilità:**

· **Inferiore:** 1,2 Vol %

· **Superiore:** 7 Vol %

· **Tensione di vapore a 20 °C:** 6,7 hPa

· **Densità a 20 °C:** 2 g/cm<sup>3</sup>

· **Densità relativa:** Non definito.

· **Densità di vapore:** Non definito.

· **Velocità di evaporazione:** Non definito.

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· <b>Solubilità in/Miscibilità con acqua:</b>	Poco e/o non miscibile.
· <b>Coefficiente di ripartizione: n-ottanolo/acqua:</b>	Non definito.
· <b>Viscosità:</b>	
<b>Dinamica:</b>	Non definito.
<b>Cinematica:</b>	Non definito.
· <b>Tenore del solvente:</b>	
<b>Solventi organici:</b>	31,1 %
<b>VOC (CE)</b>	31,10 %
<b>Contenuto solido:</b>	45,8 %
· <b>9.2 Altre informazioni</b>	Non sono disponibili altre informazioni.

### SEZIONE 10: Stabilità e reattività

- **10.1 Reattività** Non sono disponibili altre informazioni.
- **10.2 Stabilità chimica**
- **Decomposizione termica/ condizioni da evitare:** Il prodotto non si decompone se utilizzato secondo le norme.
- **10.3 Possibilità di reazioni pericolose** Non sono note reazioni pericolose.
- **10.4 Condizioni da evitare** Non sono disponibili altre informazioni.
- **10.5 Materiali incompatibili:** Non sono disponibili altre informazioni.
- **10.6 Prodotti di decomposizione pericolosi:** Non sono noti prodotti di decomposizione pericolosi.

### SEZIONE 11: Informazioni tossicologiche

- **11.1 Informazioni sugli effetti tossicologici**
- **Tossicità acuta** Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.

· **Valori LD/LC50 rilevanti per la classificazione:**

#### 108-88-3 toluene

Orale	LD50	5.000 mg/kg (rat)
Cutaneo	LD50	12.124 mg/kg (rabbit)
Per inalazione	LC50/4 h	5.320 mg/l (mouse)

- **Irritabilità primaria:**
- **Corrosione/irritazione cutanea**  
Provoca irritazione cutanea.
- **Lesioni oculari gravi/irritazioni oculari gravi**  
Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Sensibilizzazione respiratoria o cutanea**  
Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Ulteriori dati tossicologici:**
- **Effetti CMR (cancerogenicità, mutagenicità e tossicità per la riproduzione)**
- **Mutagenicità delle cellule germinali**  
Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Cancerogenicità** Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Tossicità per la riproduzione**  
Sospettato di nuocere al feto.
- **Tossicità specifica per organi bersaglio (STOT) - esposizione singola**  
Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.

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- **Tossicità specifica per organi bersaglio (STOT) - esposizione ripetuta**  
Può provocare danni agli organi in caso di esposizione prolungata o ripetuta.
- **Pericolo in caso di aspirazione**  
Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.



### SEZIONE 12: Informazioni ecologiche

- **12.1 Tossicità**
- **Tossicità acquatica:** Non sono disponibili altre informazioni.
- **12.2 Persistenza e degradabilità** Non sono disponibili altre informazioni.
- **12.3 Potenziale di bioaccumulo** Non sono disponibili altre informazioni.
- **12.4 Mobilità nel suolo** Non sono disponibili altre informazioni.
- **Ulteriori indicazioni in materia ambientale:**
- **Ulteriori indicazioni:**  
Pericolosità per le acque classe 1 (D) (Autoclassificazione): poco pericoloso  
Non immettere nelle acque freatiche, nei corsi d'acqua o nelle fognature non diluito o in grandi quantità.
- **12.5 Risultati della valutazione PBT e vPvB**
- **PBT:** Non applicabile.
- **vPvB:** Non applicabile.
- **12.6 Altri effetti avversi** Non sono disponibili altre informazioni.

### SEZIONE 13: Considerazioni sullo smaltimento

- **13.1 Metodi di trattamento dei rifiuti**
- **Consigli:** Non smaltire il prodotto insieme ai rifiuti domestici Non immettere nelle fognature.
- **Imballaggi non puliti:**
- **Consigli:** Smaltimento in conformità con le disposizioni amministrative.

### SEZIONE 14: Informazioni sul trasporto

- |   |                         |
|---|-------------------------|
| · <b>14.1 Numero ONU</b>  |                         |
| · <b>ADR, IMDG, IATA</b>  | UN1263                  |
| · <b>14.2 Nome di spedizione dell'ONU</b>   |                         |
| · <b>ADR</b>  | 1263 PITTURE            |
| · <b>IMDG</b>   | PAINT, MARINE POLLUTANT |
| · <b>IATA</b>   | PAINT                   |
| · <b>14.3 Classi di pericolo connesso al trasporto</b>  |                         |
| · <b>ADR, IMDG</b>  |                         |
|   |                         |
| · <b>Classe</b>   | 3 Liquidi infiammabili  |

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· Etichetta	3
· IATA	
	
· Class	3 Liquidi infiammabili
· Label	3
· 14.4 Gruppo di imballaggio	
· ADR, IMDG, IATA	III
· 14.5 Pericoli per l'ambiente:	
· Marine pollutant:	Simbolo (pesce e albero)
· Marcatura speciali (ADR):	Simbolo (pesce e albero)
· 14.6 Precauzioni speciali per gli utilizzatori	Attenzione: Liquidi infiammabili
· N° identificazione pericolo (Numero Kemler):	30
· Numero EMS:	F-E, S-E
· Stowage Category	A
· 14.7 Trasporto di rinfuse secondo l'allegato II di MARPOL ed il codice IBC	Non applicabile.
· Trasporto/ulteriori indicazioni:	
· ADR	
· Quantità limitate (LQ)	5L
· Quantità esenti (EQ)	Codice: E1 Quantità massima netta per imballaggio interno: 30 ml Quantità massima netta per imballaggio esterno: 1000 ml
· Categoria di trasporto	3
· Codice di restrizione in galleria	D/E
· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	UN 1263 PITTURE, 3, III

### SEZIONE 15: Informazioni sulla regolamentazione

- 15.1 Disposizioni legislative e regolamentari su salute, sicurezza e ambiente specifiche per la sostanza o la miscela
- Direttiva 2012/18/UE
- Sostanze pericolose specificate - ALLEGATO I Nessuno dei componenti è contenuto.
- Categoria Seveso P5c LIQUIDI INFIAMMABILI
- Quantità limite (tonnellate) ai fini dell'applicazione dei requisiti di soglia inferiore 5.000 t
- Quantità limite (tonnellate) ai fini dell'applicazione dei requisiti di soglia superiore 50.000 t
- REGOLAMENTO (CE) n. 1907/2006 ALLEGATO XVII Restrizioni: 3, 48

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· **Direttiva 2011/65/UE sulla restrizione dell'uso di determinate sostanze pericolose nelle apparecchiature elettriche ed elettroniche - Allegato II**

Nessuno dei componenti è contenuto.

· **REGOLAMENTO (UE) 2019/1148**

· **Allegato I - PRECURSORI DI ESPLOSIVI SOGGETTI A RESTRIZIONI (Valore limite superiore ai fini della concessione di licenze a norma dell'articolo 5, paragrafo 3)**

Nessuno dei componenti è contenuto.

· **Allegato II - PRECURSORI DI ESPLOSIVI SOGGETTI A SEGNALAZIONE**

67-64-1	acetone
---------	---------

· **Regolamento (CE) n. 273/2004 relativo ai precursori di droghe**

108-88-3	toluene	3
----------	---------	---

67-64-1	acetone	3
---------	---------	---

· **Regolamento (CE) N. 111/2005 recante norme per il controllo del commercio dei precursori di droghe tra la Comunità e i paesi terzi**

108-88-3	toluene	3
----------	---------	---

67-64-1	acetone	3
---------	---------	---

· **Disposizioni nazionali:**

· **Istruzione tecnica aria:**

Classe	quota in %
NC	31,1

· **Ulteriori disposizioni, limitazioni e decreti proibitivi**

· **Sostanze estremamente preoccupanti (SVHC) ai sensi della regolamento REACH, articolo 57**

67-64-1	acetone
---------	---------

64-17-5	etanolo
---------	---------

· **15.2 Valutazione della sicurezza chimica:** Una valutazione della sicurezza chimica non è stata effettuata.

## SEZIONE 16: Altre informazioni

I dati sono riportati sulla base delle nostre conoscenze attuali, non rappresentano tuttavia alcuna garanzia delle caratteristiche del prodotto e non motivano alcun rapporto giuridico contrattuale.

· **Frasi rilevanti**

H225 Liquido e vapori facilmente infiammabili.

H226 Liquido e vapori infiammabili.

H302 Nocivo se ingerito.

H304 Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.

H315 Provoca irritazione cutanea.

H319 Provoca grave irritazione oculare.

H332 Nocivo se inalato.

H336 Può provocare sonnolenza o vertigini.

H361d Sospettato di nuocere al feto.

H373 Può provocare danni agli organi in caso di esposizione prolungata o ripetuta.

· **Abbreviazioni e acronimi:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

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*ELINCS: European List of Notified Chemical Substances*  
*CAS: Chemical Abstracts Service (division of the American Chemical Society)*  
*VOC: Volatile Organic Compounds (USA, EU)*  
*LC50: Lethal concentration, 50 percent*  
*LD50: Lethal dose, 50 percent*  
*PBT: Persistent, Bioaccumulative and Toxic*  
*SVHC: Substances of Very High Concern*  
*vPvB: very Persistent and very Bioaccumulative*  
*Flam. Liq. 2: Liquidi infiammabili – Categoria 2*  
*Flam. Liq. 3: Liquidi infiammabili – Categoria 3*  
*Acute Tox. 4: Tossicità acuta – Categoria 4*  
*Skin Irrit. 2: Corrosione/irritazione della pelle – Categoria 2*  
*Eye Irrit. 2: Gravi lesioni oculari/irritazione oculare – Categoria 2*  
*Repr. 2: Tossicità per la riproduzione – Categoria 2*  
*STOT SE 3: Tossicità specifica per organi bersaglio (esposizione singola) – Categoria 3*  
*STOT RE 2: Tossicità specifica per organi bersaglio (esposizione ripetuta) – Categoria 2*  
*Asp. Tox. 1: Pericolo in caso di aspirazione – Categoria 1*

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# 물질안전보건자료 GHS에 따라

인쇄일자: 2022.06.01

개정: 2022.06.01

## 1 화학제품과 회사에 관한 정보

- 제품 식별자
- 제품명: **Conductive Silver Pen**
- 상품번호: 12644-01, 12644-02
- 해당 순물질이나 혼합물의 관련 하위용도 및 사용금지용도
- 제품의 권고 용도와 사용상의 제한: Conductive Silver Pen
- 제품의 권고 용도와 사용상의 제한: 실험실 화학품
- 안전데이터표(Safety Data Sheet)내 공급업체 관련 상세 정보
- 제조자/수입자/유통업자 정보:  
 Electron Microscopy Sciences  
 1560 Industry Road  
 USA-Hatfield, PA 19440  
 Tel: 215-412-8400 Fax: 215-412-8450  
 email: sgkcck@aol.com  
 www.emsdiasum.com
- Samchang Commercial Co., Ltd.  
 Yeo Eui Do  
 PO Box 1110  
 Seoul, Korea  
 Tel: 82 2 703 3040  
 Fax: 82 2 717 3298

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- Daedok Science, Co. Ltd.  
 34141 E10 Korea Advanced Institute of Science  
 Guseong-Dong, Yuseong-gu, Daejeon,  
 Korea  
 Phone: 82 42 710 2091  
 Fax: 82 42 367 0005  
 Website: www.labsmro.com
- 추가적인 정보 획득 가능: Product safety department
- 비상연락 전화번호:  
 ChemTrec 1-800-424-9300 Contract CCN7661  
 1-703-527-3887

## 2 유해성·위험성

- 순물질 또는 혼합물의 분류



화염

인화성 액체 – 구분3

H226 인화성 액체 및 증기



건강에 위험

생식독성 – 구분2

H361 태아 또는 생식능력에 손상을 일으킬 것으로 의심됨

특정표적장기 독성 - 반복 노출 – 구분2

H373 장기간 또는 반복노출 되면 장기에 손상을 일으킬 수 있음

흡인 유해성 – 구분1

H304 삼켜서 기도로 유입되면 치명적일 수 있음

(2 쪽에 계속)

# 물질안전보건자료 GHS에 따라

인쇄일자: 2022.06.01

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**제품명: Conductive Silver Pen**

(1 쪽부터계속)



피부 부식성/피부 자극성 – 구분2      H315 피부에 자극을 일으킴

- 라벨표기 요소
- GHS 라벨 요소 본 제품은 화학물질의 분류 및 표기에 관한 국제조화시스템(GHS)에 따라 분류 및 표기되었습니다.
- GHS 그림문자



GHS02



GHS07



GHS08

- 신호어 위험
- 상표상에 명확히 위험성이 표시된 성분:  
톨루엔  
heptan-2-one
- 유해·위험문구  
인화성 액체 및 증기  
피부에 자극을 일으킴  
태아 또는 생식능력에 손상을 일으킬 것으로 의심됨  
장기간 또는 반복노출 되면 장기에 손상을 일으킬 수 있음  
삼켜서 기도로 유입되면 치명적일 수 있음

- 예방조치문구  
삼켰을 시: 즉시 독성물질센터/병원 연락 필요.  
(라벨 참조) 처치를 하시오.  
토하게 하지 마시오.  
피부(또는 머리카락)에 묻으면 오염된 모든 의복은 벗거나 제거하십시오. 피부를 물로 씻으시오/샤워하십시오.  
오염된 의복은 벗고 다시 사용 전 세척하십시오.  
밀봉하여 저장하십시오.  
(지방/지역/국가/국제 규정에 따라) 에 내용물/용기를 폐기하십시오.

- 기타 유해성
- PBT(잔류성, 생물농축성, 독성 물질) 및 vPvB(고 잔류성, 고 생물농축성 물질) 평가 결과
- PBT(잔류성, 생물농축성, 독성 물질): 해당사항 없음.
- vPvB(고 잔류성, 고 생물농축성 물질): 해당사항 없음.

### 3 구성성분의 명칭 및 함유량

- 화학적 특성: 혼합물
- 설명: 무해한 첨가물이 함유된 아래에 열거된 물질로 만들어진 혼합물.

· 위험 요소:		
108-88-3	톨루엔 ⚠ 인화성 액체 – 구분2, H225; ⚠ 생식독성 – 구분2, H361; 특정표적장기 독성 - 반복 노출 – 구분2, H373; 흡인 유해성 – 구분1, H304; ⚠ 피부 부식성/피부 자극성 – 구분2, H315; 특정표적장기 독성 - 1회 노출– 구분3, H336	>10-≤25%
123-86-4	n-butyl acetate ⚠ 인화성 액체 – 구분3, H226; ⚠ 특정표적장기 독성 - 1회 노출– 구분3, H336	>2.5-≤10%
67-64-1	Acetone, Reagent Grade ⚠ 인화성 액체 – 구분2, H225; ⚠ 급성 독성 - 경구 – 구분4, H302; 심한 눈 손상성/눈 자극성 – 구분 2, H319; 특정표적장기 독성 - 1회 노출– 구분3, H336	>2.5-≤10%

(3 쪽에계속)



# 물질안전보건자료 GHS에 따라

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개정: 2022.06.01

**제품명: Conductive Silver Pen**

		(2 쪽부터계속)
64-17-5	Ethyl alcohol ⚠ 인화성 액체 – 구분2, H225	≤2.5%
110-19-0	isobutyl acetate ⚠ 인화성 액체 – 구분2, H225	≤2.5%
110-43-0	heptan-2-one ⚠ 인화성 액체 – 구분3, H226; ⚠ 급성 독성 - 경구 – 구분4, H302; 급성 독성 - 흡입 – 구분4, H332	≤2.5%
141-78-6	아세트산 에틸 ⚠ 인화성 액체 – 구분2, H225; ⚠ 심한 눈 손상성/눈 자극성 – 구분 2, H319; 특정표적장기 독성 - 1회 노출 – 구분3, H336	≤2.5%

## 4 응급조치 요령

- **응급조치요령 내용**
- **일반적 정보:**  
중독 증상은 몇 시간이 지난 뒤에 발생할 수 있다. 따라서 사고가 발생한 후에 적어도 48 시간동안은 의료진의 관찰을 받아야 한다.
- **흡입했을 때:**  
신선한 공기를 쐬고, 필요할 경우에는 산소 호흡기의 도움을 받는다. 환자를 따뜻하게 하고, 증상이 지속될 경우에는 의료진의 도움을 구한다.  
환자가 의식을 잃었을 경우에는 안전한 자세에서 환자를 운반한다.
- **피부에 접촉했을 때:** 즉시물과비누로씻고잘헹군다.
- **눈에 들어갔을 때:** 흐르는 물에 눈을 몇분동안 씻어낸다.
- **먹었을 때:** 증상이 지속될 경우에는 의사와 상담한다.
- **기타 의사의 주의사항:**
- **가장 중요한 급·만성 증상 및 영향** 추가적인 정보가 존재하지 않습니다.
- **즉각적인 의료처리 및 특별치료가 필요함을 시사하는 징후** 추가적인 정보가 존재하지 않습니다.

## 5 폭발·화재시 대처방법

- **소화제**
- **적절한 소화제:** 이산화탄소, 모래, 석회가루를 사용하고, 물을 사용하지 않는다.
- **부적절한 소화제:** 플레트용 물
- **본 화학물질이나 혼합물에서 발생하는 특별 유해성** 추가적인 정보가 존재하지 않습니다.
- **소방관에 대한 권고사항**
- **화재 진압 시 착용할 보호구 및 예방조치:** 호흡보호장비설치.

## 6 누출 사고 시 대처방법

- **개인적 예방조치, 보호장비 및 응급처치 절차** 안전장비 착용하고, 무방비의 사람은 격리시킨다.
- **환경 관련 예방조치:** 하수도망/해수면위의물/지하수로도달하지않게한다.
- **밀폐 및 정화 방법과 소재:**  
액체가 혼합된 물질(모래, 규조토, 산성 결합물, 일반 결합물, 톱밥)에 흡입되도록 한다.  
항목 13에 따라 오염된 물질을 쓰레기로 처분한다.  
충분한 환기가 되도록 한다.  
물이 나뉘은 세척제로 씻어 내지 마시오
- **타 섹션 참조**  
안전관리에 대한 정보는 제7장을 참고하시오.  
개인보호장비에 대한 정보는 제8장을 참고하시오.

(4 쪽에계속)

# 물질안전보건자료 GHS에 따라

인쇄일자: 2022.06.01

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**제품명: Conductive Silver Pen**

(3 쪽부터계속)

쓰레기 처리에 대한 정보는 제13 장을 참고하십시오.

## 7 취급 및 저장방법

- 취급:
- 안전 취급을 위한 예방조치  
작업장에서는 통풍이 잘 되고/습기 제거가 잘 되게 주의한다.  
연무질이 형성되는 것을 피한다.
- 화재 및 폭발 사고 예방대책에 관한 정보:  
발화 요소는 멀리 둔다-금연.  
열로부터 보호한다.  
정전기의 충전으로부터 보호한다.
- 혼합위험성 등 안전 저장 조건
- 보관:
- 안전한 저장 방법: 특별한 요구사항이 없음.
- 하나의 공동 보관 시설에 대한 보관 관련 정보: 필요없음
- 보관 조건에 관한 추가적인 정보:  
용기를 새지 않게 밀폐한 채 보관한다.  
열이나 직사광선으로부터 보호한다.
- 구체적 최종 사용자 추가적인 정보가 존재하지 않습니다.

## 8 노출방지 및 개인보호구

- 첨단시설 디자인에 대한 추가정보: 더 이상의 자료는 없음. 항목 7을 참고하십시오.
- 통제 변수

· 화학물질의 노출기준, 생물학적 노출기준 등:

### 108-88-3 톨루엔

OELV (KR)	단기간의값: 150 ppm 장기간의값: 50 ppm 생식독성 2
IOELV (EU)	단기간의값: 384 mg/m <sup>3</sup> , 100 ppm 장기간의값: 192 mg/m <sup>3</sup> , 50 ppm Skin
PEL (US)	장기간의값: 200 ppm 최고노출기준: 300; 500* ppm *10-min peak per 8-hr shift
REL (US)	단기간의값: 560 mg/m <sup>3</sup> , 150 ppm 장기간의값: 375 mg/m <sup>3</sup> , 100 ppm
TLV (US)	장기간의값: 20 ppm BEI, OTO, A4

### 123-86-4 n-butyl acetate

OELV (KR)	단기간의값: 200 ppm 장기간의값: 150 ppm
IOELV (EU)	단기간의값: 723 mg/m <sup>3</sup> , 150 ppm 장기간의값: 241 mg/m <sup>3</sup> , 50 ppm
PEL (US)	장기간의값: 710 mg/m <sup>3</sup> , 150 ppm

(5 쪽에계속)

물질안전보건자료  
GHS에 따라

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제품명: **Conductive Silver Pen**

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REL (US)	단기간의값: 950 mg/m <sup>3</sup> , 200 ppm 장기간의값: 710 mg/m <sup>3</sup> , 150 ppm
TLV (US)	단기간의값: 150 ppm 장기간의값: 50 ppm
<b>67-64-1 Acetone, Reagent Grade</b>	
OELV (KR)	단기간의값: 750 ppm 장기간의값: 500 ppm
IOELV (EU)	장기간의값: 1210 mg/m <sup>3</sup> , 500 ppm
PEL (US)	장기간의값: 2400 mg/m <sup>3</sup> , 1000 ppm
REL (US)	장기간의값: 590 mg/m <sup>3</sup> , 250 ppm
TLV (US)	단기간의값: 500 ppm 장기간의값: 250 ppm A4, BEI
<b>64-17-5 Ethyl alcohol</b>	
OELV (KR)	장기간의값: 1000 ppm 발암성 1A
PEL (US)	장기간의값: 1900 mg/m <sup>3</sup> , 1000 ppm
REL (US)	장기간의값: 1900 mg/m <sup>3</sup> , 1000 ppm
TLV (US)	단기간의값: 1000 ppm A3
<b>110-19-0 isobutyl acetate</b>	
OELV (KR)	단기간의값: 187 ppm 장기간의값: 150 ppm
IOELV (EU)	단기간의값: 723 mg/m <sup>3</sup> , 150 ppm 장기간의값: 241 mg/m <sup>3</sup> , 50 ppm
PEL (US)	장기간의값: 700 mg/m <sup>3</sup> , 150 ppm
REL (US)	장기간의값: 700 mg/m <sup>3</sup> , 150 ppm
TLV (US)	단기간의값: 150 ppm 장기간의값: 50 ppm
<b>110-43-0 heptan-2-one</b>	
OELV (KR)	장기간의값: 50 ppm
IOELV (EU)	단기간의값: 475 mg/m <sup>3</sup> , 100 ppm 장기간의값: 238 mg/m <sup>3</sup> , 50 ppm Skin
PEL (US)	장기간의값: 465 mg/m <sup>3</sup> , 100 ppm
REL (US)	장기간의값: 465 mg/m <sup>3</sup> , 100 ppm
TLV (US)	장기간의값: 50 ppm
<b>141-78-6 아세트산 에틸</b>	
OELV (KR)	장기간의값: 400 ppm
IOELV (EU)	단기간의값: 1468 mg/m <sup>3</sup> , 400 ppm 장기간의값: 734 mg/m <sup>3</sup> , 200 ppm
PEL (US)	장기간의값: 1400 mg/m <sup>3</sup> , 400 ppm
REL (US)	장기간의값: 1400 mg/m <sup>3</sup> , 400 ppm
TLV (US)	장기간의값: 400 ppm

(6 쪽에계속)

물질안전보건자료  
GHS에 따라

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제품명: Conductive Silver Pen

(5 쪽부터계속)

· 생물학적 허용값을 갖는 원료:	
<b>108-88-3 톨루엔</b>	
BEI (US)	0.02 mg/L Medium: blood Time: prior to last shift of workweek Parameter: Toluene
	0.03 mg/L Medium: urine Time: end of shift Parameter: Toluene
	0.3 mg/g creatinine Medium: urine Time: end of shift Parameter: o-Cresol with hydrolysis (background)
<b>67-64-1 Acetone, Reagent Grade</b>	
BEI (US)	25 mg/L Medium: urine Time: end of shift Parameter: Acetone (nonspecific)

· 추가 정보: 제조 할 당시에 유효 한 목 록을 기초로 사용했다.

· 노출 통제

· 개인 보호구

· 일반적보호조치및위생조치:

- 식 료 품, 음 료 수와 사 료 로 부 터 멀 리 떨 어 뜨 려 놓 는 다.
- 더 러 워 지 거 나 음 료 수 가 묻 은 옷 은 즉 시 탈 의 한 다.
- 휴 식 전 이 나 작 업 이 끝 날 때 마 다 손 을 씻 는 다.
- 피 부와 의 접 촉 을 피 한 다.
- 눈 과 피 부와 의 접 촉 은 피 한 다.

· 호흡기 보호:

단 시 간 또 는 경 미 한 오 염 의 경 우 에 는 호 흡 여 과 기 를 사 용 한 다. 심 각 한 또 는 장 기 간 노 출 시 에 는 호 흡 보 호 장 비 를 사 용 한 다.

· 손 보호:



보호용 장갑

장갑재질은제품 / 원료 / 조제를투과시키지않아야하고, 내구성이있어야한다.

테 스트 를 하 지 않 았 기 때 문 에 제 품 / 조 제 / 화 학 혼 합 물 에 적 합 한 장 갑 재 질 에 대 한 추 천 이 없 다.

투과 시간, 침투율과저하를고려해서장갑재료를선택한다.

· 장갑의재료

적합한장갑의선택은재질차이뿐아니라품질기준의차이도고려하여이루어져야하고제조업종에따라서도다르게선정되어야한다 .  
제품은다양한재료로부터의조제로이루어지는것이기에때문에 , 장갑재질의안정성은사전에예측되어질수있는것이아니고 ,  
반드시사용전에 (그안전성이) 체크되어야한다.

· 장갑재료의투과시간 정확한관통시간은보호장갑제조자에의하여인지되고, 준수되어야한다.

(7 쪽에계속)

물질안전보건자료  
GHS에 따라

인쇄일자: 2022.06.01

개정: 2022.06.01

제품명: Conductive Silver Pen

(6 쪽부터계속)

· 눈 보호:



꼭조이는보안경

9 물리화학적 특성

· 기본 물리 및 화학적 특성에 대한 정보	
· 일반정보	
· 외형	
· 물리적 상태:	액체
· 색:	회색의
· 냄새:	달콤한
· 후각역치	알맞지않다.
· pH:	알맞지않다.
· 상태변화	
· 녹는점/어는점:	맞지않는
· 초기 끓는점과 끓는점 범위:	126 °C
· 인화점:	24 °C
· 인화성(고체, 기체):	해당사항 없음.
· 점화온도:	370 °C
· 분해 온도:	알맞지않다.
· 자기점화:	이제품은자연발화성이없다.
· 폭발위험:	이제품은폭발위험성이없지만 폭발가능성이있는증기화합물/공기화합물의형성가능성이있다.
· 인화 또는 폭발 범위의 상한/하한	
· 아래로:	1.2 Vol %
· 위로:	7 Vol %
· 증기압 의경우 20 °C:	6.7 hPa
· 밀도 의경우 20 °C:	2 g/cm <sup>3</sup>
· 비중:	알맞지않다.
· 증기밀도:	알맞지않다.
· 증발 속도:	알맞지않다.
· 용해도:	
· 물:	각각의경우에따라서는거의혼합할수없는
· n 옥탄올/물 분배계수:	알맞지않다.
· 점도:	
· 역학성:	알맞지않다.
· 동점성:	알맞지않다.
· 용매내용물	
· 유기용매:	31.1 %
· VOC (EU)	31.10 %

(8 쪽에계속)



# 물질안전보건자료 GHS에 따라

인쇄일자: 2022.06.01

개정: 2022.06.01

**제품명: Conductive Silver Pen**

(8 쪽부터계속)

- PBT(잔류성, 생물농축성, 독성 물질) 및 vPvB(고 잔류성, 고 생물농축성 물질) 평가 결과
- PBT(잔류성, 생물농축성, 독성 물질): 해당사항 없음.
- vPvB(고 잔류성, 고 생물농축성 물질): 해당사항 없음.
- 기타 부작용 추가적인 정보가 존재하지 않습니다.

## 13 폐기시 주의사항

- 폐기물 처리 방법
- 권고: 생활쓰레기와함께처리되어서는안된다. 하수도망으로유입되어서는안된다.
- 비위생적 포장:
- 권고: 당국의지침에입각한쓰레기처리.

## 14 운송에 필요한 정보

<ul style="list-style-type: none"> <li>· 유엔 번호</li> <li>· ADR, IMDG, IATA</li> </ul>	UN1263
<ul style="list-style-type: none"> <li>· UN 적정 선적명</li> <li>· ADR</li> <li>· IMDG</li> <li>· IATA</li> </ul>	1263 PAINT PAINT, MARINE POLLUTANT PAINT
<ul style="list-style-type: none"> <li>· 교통 위험 클래스</li> <li>· ADR, IMDG</li> </ul> <div style="display: flex; justify-content: center; align-items: center; gap: 10px;">   </div>	3 발화성용액 3
<ul style="list-style-type: none"> <li>· IATA</li> </ul> <div style="display: flex; justify-content: center; align-items: center; gap: 10px;">  </div>	3 발화성용액 3
<ul style="list-style-type: none"> <li>· 용기등급</li> <li>· ADR, IMDG, IATA</li> </ul>	III
<ul style="list-style-type: none"> <li>· 환경적 유해물질:</li> <li>· 해양오염물질:</li> <li>· 특수 마킹 (ADR):</li> </ul>	심별 (물고기와 나무) 심별 (물고기와 나무)
<ul style="list-style-type: none"> <li>· 이용자 특별 예방조치</li> <li>· 위험 코드:</li> <li>· EMS-번호:</li> <li>· Stowage Category</li> </ul>	경고: 발화성용액 30 F-E,S-E A

(10 쪽에계속)

## 물질안전보건자료 GHS에 따라

인쇄일자: 2022.06.01

개정: 2022.06.01

**제품명: Conductive Silver Pen**

(9 쪽부터계속)

· <b>MARPOL73/78(선박으로부터의 해양오염방지협약)</b> 부속서2 및 IBC Code(국제선적화물코드)에 따른 벌크(bulk) 운송		해당사항 없음.
· 운 송/추가 정보:		
· <b>ADR</b> · 한정 수량 (LQ) · Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml	
· 운송 구분 · 터널 제한 코드	3 D/E	
· <b>IMDG</b> · Limited quantities (LQ) · Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml	
· UN "모범 규제":	UN 1263 PAINT, 3, III	

### 15 법적 규제현황

· 산업안전보건법에 의한 규제:

· 제조 등 금지물질:

어떠한내용물도 목록화되어있지않다

· 허가대상물질:

어떠한내용물도 목록화되어있지않다

· 관리대상유해물질:

7440-22-4	silver
108-88-3	톨루엔
123-86-4	n-butyl acetate
67-64-1	Acetone, Reagent Grade
110-19-0	isobutyl acetate
110-43-0	heptan-2-one
141-78-6	아세트산 에틸

· 작업환경측정 대상 유해인자

7440-22-4	silver	1B14
108-88-3	톨루엔	1A96
123-86-4	n-butyl acetate	1A83
67-64-1	Acetone, Reagent Grade	1A55
110-19-0	isobutyl acetate	1A86
110-43-0	heptan-2-one	1A33
141-78-6	아세트산 에틸	1A84

· 특수건강진단 대상 유해인자

108-88-3	톨루엔	1A88
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(11 쪽에계속)



물질안전보건자료  
GHS에 따라

인쇄일자: 2022.06.01

개정: 2022.06.01

제품명: Conductive Silver Pen

(10 쪽부터계속)

67-64-1	Acetone, Reagent Grade	1A55
110-43-0	heptan-2-one	1A30

· 해당 순물질 또는 혼합물에 대한 안전, 보건 및 환경 규제/법률 추가적인 정보가 존재하지 않습니다.

· Korean Existing Chemical Inventory

7440-22-4	silver	KE-31261
108-88-3	톨루엔	KE-33936
123-86-4	n-butyl acetate	KE-04179
67-64-1	Acetone, Reagent Grade	KE-29367
64-17-5	Ethyl alcohol	KE-13217
110-19-0	isobutyl acetate	KE-00055
110-43-0	heptan-2-one	KE-18303
141-78-6	아세트산 에틸	KE-00047
108-65-6	2-methoxy-1-methylethyl acetate	KE-23315

· 화학물질관리법

· 사고대비물질

108-88-3	톨루엔
141-78-6	아세트산 에틸

· 금지물질

어떠한내용물도목록화되어있지않다

· 제한물질

어떠한내용물도목록화되어있지않다

· 유독물질

108-88-3	톨루엔
141-78-6	아세트산 에틸

· 허가물질

108-88-3	톨루엔
141-78-6	아세트산 에틸

· 위험물안전관리법 (위험물 및 지정수량) 제 4: 200 리터

· 등록 또는 신고 면제대상 화학물질

어떠한내용물도목록화되어있지않다

· '21년까지 등록하여야 할 암, 돌연변이, 생식능력 이상을 일으키거나 일으킬 우려가 있는 기존화학물질

어떠한내용물도목록화되어있지않다

· 중점관리물질의 지정

· 표1 중점관리물질(제2조 관련)

어떠한내용물도목록화되어있지않다

· 표2 중점관리물질(제2조 관련)

어떠한내용물도목록화되어있지않다

· GHS 라벨 요소 본 제품은 화학물질의 분류 및 표기에 관한 국제조화시스템(GHS)에 따라 분류 및 표기되었습니다.

· GHS 그림문자



GHS02 GHS07 GHS08

(12 쪽에계속)

# 물질안전보건자료 GHS에 따라

인쇄일자: 2022.06.01

개정: 2022.06.01

**제품명: Conductive Silver Pen**

(11 쪽부터계속)

- **신호어 위험**
- **상표상에명확히위험성이표시된성분:**  
 톨루엔  
 heptan-2-one
- **유해·위험문구**  
 인화성 액체 및 증기  
 피부에 자극을 일으킴  
 태아 또는 생식능력에 손상을 일으킬 것으로 의심됨  
 장기간 또는 반복노출 되면 장기에 손상을 일으킬 수 있음  
 삼켜서 기도로 유입되면 치명적일 수 있음
- **예방조치문구**  
 삼켰을 시: 즉시 독성물질센터/병원 연락 필요.  
 (라벨 참조) 처치를 하시오.  
 토하게 하지 마시오.  
 피부(또는 머리카락)에 묻으면 오염된 모든 의복은 벗거나 제거하십시오. 피부를 물로 씻으시오/샤워하십시오 .  
 오염된 의복은 벗고 다시 사용 전 세척하십시오.  
 밀봉하여 저장하십시오.  
 (지방/지역/국가/국제 규정에 따라) 에 내용물/용기를 폐기하십시오.
- **화학물질 안전성 평가:** 화학물질 안전성 평가가 수행되지 않음

## 16 그 밖의 참고사항

이 보고는 우리 지식에 대한 오늘날의 상태에 대하여 평가하고 있다  
 하지만 이 보고서는 생산 특성에 관한 보증은 기술하지 않았으며 계약적인 법률 관계에 기반을 두고 있지 않다

- **담당자:**
- **최초 작성일자:** 2022.06.01
- **개정 횟수 및 최종 개정일자:** 1 / 2022.06.01
- **약어와 두문자어:**  
 ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)  
 IMDG: International Maritime Code for Dangerous Goods  
 IATA: International Air Transport Association  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 ELINCS: European List of Notified Chemical Substances  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)  
 VOC: Volatile Organic Compounds (USA, EU)  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent  
 PBT: Persistent, Bioaccumulative and Toxic  
 vPvB: very Persistent and very Bioaccumulative

**Ficha de dados de segurança**  
em conformidade com 1907/2006/CE, Artigo 31º

data da impressão 01.06.2022

Revisão: 01.06.2022

### SECÇÃO 1: Identificação da substância/mistura e da sociedade/empresa

- **1.1 Identificador do produto**
- **Nome comercial:** Conductive Silver Pen
- **Código do produto:** 12644-01, 12644-02
- **UFI:** W7P0-6083-P00T-7CJA
- **1.2 Utilizações identificadas relevantes da substância ou mistura e utilizações desaconselhadas**  
Não existe mais nenhuma informação relevante disponível.
- **Utilização da substância / da preparação** Químicos de laboratório
- **1.3 Identificação do fornecedor da ficha de dados de segurança**
- **Fabricante/fornecedor:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkceck@aol.com  
www.emsdiasum.com
- **Entidade para obtenção de informações adicionais:** Product safety department
- **1.4 Número de telefone de emergência:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

### SECÇÃO 2: Identificação dos perigos

- **2.1 Classificação da substância ou mistura**
- **Classificação em conformidade com o Regulamento (CE) n.º 1272/2008**



GHS02 chama

Flam. Liq. 3 H226 Líquido e vapor inflamáveis.



GHS08 perigo para a saúde

Repr. 2 H361d Suspeito de afectar o nascituro.

STOT RE 2 H373 Pode afectar os órgãos após exposição prolongada ou repetida.

Asp. Tox. 1 H304 Pode ser mortal por ingestão e penetração nas vias respiratórias.



GHS07

Skin Irrit. 2 H315 Provoca irritação cutânea.

- **2.2 Elementos do rótulo**
- **Rotulagem em conformidade com o Regulamento (CE) n.º 1272/2008**  
O produto classificou-se e está etiquetado em conformidade com o regulamento CLP.
- **Pictogramas de perigo**



GHS02



GHS07



GHS08

(continuação na página 2)

# Ficha de dados de segurança

## em conformidade com 1907/2006/CE, Artigo 31º

data da impressão 01.06.2022

Revisão: 01.06.2022

Nome comercial: **Conductive Silver Pen**

(continuação da página 1)

· **Palavra-sinal Perigo**

· **Componentes determinantes para os perigos constantes do rótulo:**

tolueno

· **Advertências de perigo**

H226 Líquido e vapor inflamáveis.

H315 Provoca irritação cutânea.

H361d Suspeito de afectar o nascituro.

H373 Pode afectar os órgãos após exposição prolongada ou repetida.

H304 Pode ser mortal por ingestão e penetração nas vias respiratórias.

· **Recomendações de prudência**

P301+P310 EM CASO DE INGESTÃO: contacte imediatamente um CENTRO DE INFORMAÇÃO ANTIVENENOS/médico.

P321 Tratamento específico (ver no presente rótulo).

P331 NÃO provocar o vômito.

P303+P361+P353 SE ENTRAR EM CONTACTO COM A PELE (ou o cabelo): Retirar imediatamente toda a roupa contaminada. Enxaguar a pele com água [ou tomar um duche].

P362+P364 Retirar a roupa contaminada e lavá-la antes de a voltar a usar.

P405 Armazenar em local fechado à chave.

P501 Eliminar o conteúdo/recipiente de acordo com a legislação local/regional/nacional/internacional.

· **Indicações adicionais:**

O produto contém: Precursores de explosivos passíveis de participação. Disponibilização, introdução, posse e utilização em conformidade com Regulamento (UE) 2019/1148, Artigo 9.º.

· **2.3 Outros perigos**

· **Resultados da avaliação PBT e mPmB**

· **PBT:** Não aplicável.

· **mPmB:** Não aplicável.

### SECÇÃO 3: Composição/informação sobre os componentes

· **3.2 Caracterização química: Misturas**

· **Descrição:** Mistura das seguintes substâncias com aditivos não perigosos.

· **Substâncias perigosas:**

CAS: 108-88-3 EINECS: 203-625-9	tolueno ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	acetato de n-butilo ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	acetona ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	etanol ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-19-0 EINECS: 203-745-1	acetato de isobutilo ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-43-0 EINECS: 203-767-1	heptano-2-ona ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	≤2,5%
CAS: 141-78-6 EINECS: 205-500-4	acetato de etilo ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	≤2,5%

(continuação na página 3)

# Ficha de dados de segurança

## em conformidade com 1907/2006/CE, Artigo 31º

data da impressão 01.06.2022

Revisão: 01.06.2022

Nome comercial: *Conductive Silver Pen*

( continuação da página 2 )

· <b>SVHC</b>	
67-64-1	acetona
64-17-5	etanol

· **Avisos adicionais:** O texto das indicações de perigo aqui incluído poderá ser consultado no capítulo 16.

### SECÇÃO 4: Medidas de primeiros socorros

#### · 4.1 Descrição das medidas de primeiros socorros

##### · Indicações gerais:

Os sintomas de envenenamento podem surgir apenas após várias horas, por isso é necessária vigilância médica pelo menos 48 horas após o acidente.

##### · Em caso de inalação:

Remover a vítima para um local arejado. Se necessário administrar respiração artificial. Manter a vítima aquecida. Se os sintomas persistirem, consultar o médico.

Se a vítima estiver inconsciente, posicioná-la e transportá-la com estabilidade, deitada lateralmente.

##### · Em caso de contacto com a pele: Lavar imediatamente com água e sabão e enxaguar abundantemente.

##### · Em caso de contacto com os olhos:

Enxaguar os olhos durante alguns minutos sob água corrente, mantendo as pálpebras abertas.

##### · Em caso de ingestão: Se os sintomas persistirem, consultar o médico.

#### · 4.2 Sintomas e efeitos mais importantes, tanto agudos como retardados

Não existe mais nenhuma informação relevante disponível.

#### · 4.3 Indicações sobre cuidados médicos urgentes e tratamentos especiais necessários

Não existe mais nenhuma informação relevante disponível.

### SECÇÃO 5: Medidas de combate a incêndios

#### · 5.1 Meios de extinção

· **Meios adequados de extinção:** CO2, areia, pó extintor. Não usar água.

· **Meios de extinção que não devam ser utilizados por razões de segurança:** Água em jacto

#### · 5.2 Perigos especiais decorrentes da substância ou mistura

Não existe mais nenhuma informação relevante disponível.

#### · 5.3 Recomendações para o pessoal de combate a incêndios

· **Equipamento especial de protecção:** Colocar máscara de respiração.

### SECÇÃO 6: Medidas a tomar em caso de fugas acidentais

#### · 6.1 Precauções individuais, equipamento de protecção e procedimentos de emergência

Usar equipamento de protecção. Manter as pessoas desprotegidas afastadas.

· **6.2 Precauções a nível ambiental:** Evitar que penetre na canalização / águas superficiais / águas subterrâneas.

#### · 6.3 Métodos e materiais de confinamento e limpeza:

Recolher com produtos que absorvam líquidos (areia, seixos, absorventes universais, serradura).

Eliminar residualmente as substâncias contaminadas como um resíduo segundo o Ponto 13.

Assegurar uma ventilação adequada.

Não limpar com água ou produtos de limpeza aquosos.

#### · 6.4 Remissão para outras secções

Para informações sobre uma manipulação segura, ver o capítulo 7.

Para informações referentes ao equipamento de protecção individual, ver o capítulo 8.

Para informações referentes à eliminação residual, ver o capítulo 13.

PT

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### SECÇÃO 7: Manuseamento e armazenagem

- **7.1 Precauções para um manuseamento seguro**  
Assegurar uma boa ventilação / exaustão no local de trabalho.  
Evitar a formação de aerossóis.
- **Precauções para prevenir incêndios e explosões:**  
Manter afastado de fontes de ignição - não fumar.  
Proteger do calor.  
Proteger contra descargas electrostáticas.
- **7.2 Condições de armazenagem segura, incluindo eventuais incompatibilidades**
- **Armazenagem:**
- **Requisitos para espaços ou contentores para armazenagem:** Sem requisitos especiais.
- **Avisos para armazenagem conjunta:** Não necessário.
- **Outros avisos sobre as condições de armazenagem:**  
Manter o recipiente hermeticamente fechado.  
Proteger do calor e da radiação directa do sol.
- **7.3 Utilização(ões) final(is) específica(s)** Não existe mais nenhuma informação relevante disponível.

### SECÇÃO 8: Controlo da exposição/Proteção individual

- **8.1 Parâmetros de controlo**
- **Indicações adicionais para concepção de instalações técnicas:** Não existem outras informações, ver ponto 7.
- **Componentes cujo valor do limite de exposição no local de trabalho deve ser monitorizado:**

<b>108-88-3 tolueno</b>	
VLE	Valor para exposição longa: 20 ppm A4, IBE; afeção vista; lesão apar. repr. fem., aborto
<b>123-86-4 acetato de n-butilo</b>	
VLE	Valor para exposição curta: 200 ppm Valor para exposição longa: 150 ppm Irritação ocular e do TRS
<b>67-64-1 acetona</b>	
VLE	Valor para exposição curta: (750) ppm Valor para exposição longa: (500) ppm (A4), IBE; (Irrit. ocular, TRS; SNC, Efeitos hematológ.)
<b>64-17-5 etanol</b>	
VLE	Valor para exposição curta: 1000 ppm A3; Irritação do TRS
<b>110-19-0 acetato de isobutilo</b>	
VLE	Valor para exposição longa: 150 ppm Irritação ocular e do TRS
<b>110-43-0 heptano-2-ona</b>	
VLE	Valor para exposição longa: 50 ppm irritação ocular e cutânea
<b>141-78-6 acetato de etilo</b>	
VLE	Valor para exposição longa: 400 ppm Irritação ocular e do TRS

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· **Componentes con valores-limite biológicos:****108-88-3 tolueno**

IBE 0,02 mg/L

Amostra: sangue

Momento da amostragem: Antes do último turno da semana de trabalho

Indicador biológico: Tolueno

0,03 mg/L

Amostra: urina

Momento da amostragem: Fim do turno

Indicador biológico: Tolueno

0,3 mg/g creatinina

Amostra: urina

Momento da amostragem: Fim do turno

Indicador biológico: o-Cresol

**67-64-1 acetona**

IBE 50 mg/L

Amostra: urina

Momento da amostragem: Fim do turno

Indicador biológico: Acetona

· **Indicações adicionais:** Foram utilizadas como base as listas válidas à data da elaboração.· **8.2 Controlo da exposição**· **Equipamento de protecção individual:**· **Medidas gerais de protecção e higiene:**

Manter afastado de alimentos, bebidas e forragens.

Despir imediatamente a roupa contaminada e embebida.

Lavar as mãos antes das pausas e no fim do trabalho.

Evitar o contacto com a pele.

Evitar o contacto com os olhos e com a pele.

· **Protecção respiratória:**

Utilizar uma máscara respiratória se a exposição for reduzida ou durante um curto espaço de tempo; se esta for mais prolongada ou mais intensa, utilizar uma máscara respiratória independente do ar ambiente.

· **Protecção das mãos:**

Luvas de protecção

O material das luvas tem de ser impermeável e resistente ao produto / à substância / preparação.

Uma vez que não foram realizados testes nesta área, não podemos recomendar um determinado tipo de material para as luvas que seja adequado para o produto / a preparação / a mistura de químicos.

Escolher o material das luvas tendo em consideração a durabilidade, a permeabilidade e a degradação.

· **Material das luvas**

A escolha das luvas mais adequadas não depende apenas do material, mas também de outras características qualitativas e varia de fabricante para fabricante. O facto de o produto ser composto por uma variedade de materiais leva a que não seja possível prever a duração dos mesmos e, conseqüentemente, das luvas, sendo assim necessário proceder a uma verificação antes da sua utilização.

· **Tempo de penetração no material das luvas**

Deve informar-se sobre a validade exacta das suas luvas junto do fabricante e respeitá-la.

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· **Protecção dos olhos:**

Óculos de protecção totalmente fechados

### SECÇÃO 9: Propriedades físico-químicas

· **9.1 Informações sobre propriedades físicas e químicas de base**· **Informações gerais**· **Aspetto:**

· <b>Forma:</b>	Líquido
· <b>Cor:</b>	Cinzento
· <b>Odor:</b>	Adocicado
· <b>Limiar olfactivo:</b>	Não determinado.

· **valor pH:** Não determinado.· **Mudança do estado:**

· <b>Ponto de fusão/ponto de congelação:</b>	Não determinado.
· <b>Ponto de ebulição inicial e intervalo de ebulição:</b>	126 °C

· **Ponto de inflamação:** 24 °C· **Inflamabilidade (sólido, gás):** Não aplicável.· **Temperatura de ignição:** 370 °C· **Temperatura de decomposição:** Não determinado.· **Temperatura de autoignição:** O produto não é auto-inflamável.· **Propriedades explosivas:** O produto não é explosivo. Contudo, é possível a formação de misturas explosivas ar/vapor.· **Limites de explosão:**

· <b>Inferior:</b>	1,2 Vol %
· <b>Superior:</b>	7 Vol %

· **Pressão de vapor em 20 °C:** 6,7 hPa· **Densidade em 20 °C:** 2 g/cm<sup>3</sup>· **Densidade relativa** Não determinado.· **Densidade de vapor** Não determinado.· **Taxa de evaporação:** Não determinado.· **Solubilidade em / miscibilidade com água:**

Pouco misturável.

· **Coefficiente de partição: n-octanol/água** Não determinado.· **Viscosidade:**

· <b>Dinâmico:</b>	Não determinado.
· <b>Cinemático:</b>	Não determinado.

· **Percentagem de solvente:**

· <b>Solventes orgânicos:</b>	31,1 %
· <b>VOC (UE)</b>	31,10 %

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<b>Percentagem de substâncias sólidas:</b>	45,8 %
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· <b>9.2 Outras informações</b>	Não existe mais nenhuma informação relevante disponível.
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### SECÇÃO 10: Estabilidade e reactividade

- **10.1 Reactividade** Não existe mais nenhuma informação relevante disponível.
- **10.2 Estabilidade química**
- **Decomposição térmica / condições a evitar:** Não existe decomposição se usado de acordo com as especificações.
- **10.3 Possibilidade de reações perigosas** Não se conhecem reacções perigosas.
- **10.4 Condições a evitar** Não existe mais nenhuma informação relevante disponível.
- **10.5 Materiais incompatíveis:** Não existe mais nenhuma informação relevante disponível.
- **10.6 Produtos de decomposição perigosos:** Não se conhecem produtos de decomposição perigosos.

### SECÇÃO 11: Informação toxicológica

- **11.1 Informações sobre os efeitos toxicológicos**
- **Toxicidade aguda** Com base nos dados disponíveis, os critérios de classificação não são preenchidos.

· **Valores LD/LC50 relevantes para a classificação:**

#### 108-88-3 tolueno

por via oral	LD50	5.000 mg/kg (rat)
por via dérmica	LD50	12.124 mg/kg (rabbit)
por inalação	LC50/4 h	5.320 mg/l (mouse)

- **Efeito de irritabilidade primário:**
- **Corrosão/irritação cutânea**  
Provoca irritação cutânea.
- **Lesões oculares graves/irritação ocular**  
Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
- **Sensibilização respiratória ou cutânea**  
Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
- **Avisos adicionais de toxicologia:**
- **Efeitos CMR (carcinogenicidade, mutagenicidade e efeitos tóxicos na reprodução)**
- **Mutagenicidade em células germinativas**  
Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
- **Carcinogenicidade** Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
- **Toxicidade reprodutiva**  
Suspeito de afectar o nascituro.
- **Toxicidade para órgãos-alvo específicos (STOT) - exposição única**  
Com base nos dados disponíveis, os critérios de classificação não são preenchidos.
- **Toxicidade para órgãos-alvo específicos (STOT) - exposição repetida**  
Pode afectar os órgãos após exposição prolongada ou repetida.
- **Perigo de aspiração**  
Pode ser mortal por ingestão e penetração nas vias respiratórias.

### SECÇÃO 12: Informação ecológica

- **12.1 Toxicidade**
- **Toxicidade aquática:** Não existe mais nenhuma informação relevante disponível.
- **12.2 Persistência e degradabilidade** Não existe mais nenhuma informação relevante disponível.

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- **12.3 Potencial de bioacumulação** Não existe mais nenhuma informação relevante disponível.
- **12.4 Mobilidade no solo** Não existe mais nenhuma informação relevante disponível.
- **Outras indicações ecológicas:**
- **Indicações gerais:**  
Classe de perigo para a água 1 (D) (auto-classificação): pouco perigoso para a água  
Não deixar chegar substâncias concentradas, ou seja quantidades grandes, às águas subterrâneas, aos cursos de água ou à canalização.
- **12.5 Resultados da avaliação PBT e mPmB**
- **PBT:** Não aplicável.
- **mPmB:** Não aplicável.
- **12.6 Outros efeitos adversos** Não existe mais nenhuma informação relevante disponível.

### SECÇÃO 13: Considerações relativas à eliminação

- **13.1 Métodos de tratamento de resíduos**
- **Recomendação:** Não se pode eliminar juntamente com o lixo doméstico. Não permita que chegue à canalização.
- **Embalagens contaminadas:**
- **Recomendação:** Eliminação residual conforme o regulamento dos serviços públicos.

### SECÇÃO 14: Informações relativas ao transporte

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>· <b>14.1 Número ONU</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <p style="text-align: center;">UN1263</p>   |
| <ul style="list-style-type: none"> <li>· <b>14.2 Designação oficial de transporte da ONU</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG</b></li> <li>· <b>IATA</b></li> </ul> | <p style="text-align: center;">1263 TINTAS<br/>PAINT, MARINE POLLUTANT<br/>PAINT</p>  |
| <ul style="list-style-type: none"> <li>· <b>14.3 Classes de perigo para efeitos de transporte</b></li> <li>· <b>ADR, IMDG</b></li> </ul>                                    | <div style="display: flex; align-items: center; justify-content: center;">   </div> <p style="text-align: center;">3 Líquidos inflamáveis<br/>3</p> |
| <ul style="list-style-type: none"> <li>· <b>IATA</b></li> </ul>   | <div style="display: flex; align-items: center; justify-content: center;">  </div> <p style="text-align: center;">3 Líquidos inflamáveis<br/>3</p>   |
| <ul style="list-style-type: none"> <li>· <b>14.4 Grupo de embalagem</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <p style="text-align: center;">III</p>  |
| <ul style="list-style-type: none"> <li>· <b>14.5 Perigos para o ambiente:</b></li> <li>· <b>Poluente das águas:</b></li> </ul>  | <p style="text-align: center;">Símbolo convencional (peixes e árvore)</p>   |

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· <b>Marcação especial (ADR):</b>	<i>Símbolo convencional (peixes e árvore)</i>
· <b>14.6 Precauções especiais para o utilizador</b>	<i>Atenção: Líquidos inflamáveis</i>
· <b>Número de identificação de perigo (Nº Kemler):</b>	<i>30</i>
· <b>Nº EMS:</b>	<i>F-E,S-E</i>
· <b>Stowage Category</b>	<i>A</i>
· <b>14.7 Transporte a granel em conformidade com o anexo II da Convenção MARPOL e o Código IBC</b> Não aplicável.	
· <b>Transporte/outras informações:</b>	
· <b>ADR</b>	
· <b>Quantidades Limitadas (LQ)</b>	<i>5L</i>
· <b>Quantidades exceptuadas (EQ)</b>	<i>Código: E1</i> <i>Quantidade líquida máxima por embalagem interior: 30 ml</i> <i>Quantidade líquida máxima por embalagem exterior: 1000 ml</i>
· <b>Categoria de transporte</b>	<i>3</i>
· <b>Código de restrição em túneis</b>	<i>D/E</i>
· <b>IMDG</b>	
· <b>Limited quantities (LQ)</b>	<i>5L</i>
· <b>Excepted quantities (EQ)</b>	<i>Code: E1</i> <i>Maximum net quantity per inner packaging: 30 ml</i> <i>Maximum net quantity per outer packaging: 1000 ml</i>
· <b>UN "Model Regulation":</b>	<i>UN 1263 TINTAS, 3, III</i>

### SECÇÃO 15: Informação sobre regulamentação

· **15.1 Regulamentação/legislação específica para a substância ou mistura em matéria de saúde, segurança e ambiente**

· **Diretiva 2012/18/UE**

· **Substâncias perigosas designadas - ANEXO I** Nenhum dos componentes se encontra listado.

· **Categoria "Seveso" P5c LÍQUIDOS INFLAMÁVEIS**

· **Quantidades-limiar (em toneladas), para a aplicação de requisitos de nível inferior** 5.000 t

· **Quantidades-limiar (em toneladas), para a aplicação de requisitos de nível superior** 50.000 t

· **Regulamento (CE) n.º 1907/2006 ANEXO XVII** Condições de limitação: 3, 48

· **Directiva 2011/65/UE relativa à restrição do uso de determinadas substâncias perigosas em equipamentos eléctricos e electrónicos - Anexo II**

*Nenhum dos componentes se encontra listado.*

· **REGULAMENTO (UE) 2019/1148**

· **Anexo I - PRECURSORES DE EXPLOSIVOS OBJETO DE RESTRIÇÕES (Valor-limite máximo para efeitos de licenciamento nos termos do artigo 5.o, n.o 3)**

*Nenhum dos componentes se encontra listado.*

· **Anexo II - PRECURSORES DE EXPLOSIVOS PASSÍVEIS DE PARTICIPAÇÃO**

67-64-1 acetona

· **Regulamento (CE) n.º 273/2004 relativo aos precursores de drogas**

108-88-3 tolueno

3

67-64-1 acetona

3

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· **Regulamento (CE) n.º 111/2005 que estabelece regras de controlo do comércio de precursores de drogas entre a Comunidade e países terceiros**

108-88-3	tolueno	3
67-64-1	acetona	3

· **Disposições nacionais:**

· **outros regulamentos, restrições e decretos que proibem**

· **Substâncias que suscitem elevada preocupação (SVHC) em conformidade com REACH, artigo 57**

67-64-1	acetona
64-17-5	etanol

· **15.2 Avaliação da segurança química: Não foi realizada nenhuma Avaliação de Segurança Química.**

### SECÇÃO 16: Outras informações

As informações fornecidas baseiam-se no estado actual dos nossos conhecimentos, embora não representem uma garantia das propriedades do produto e não fundamentam uma relação contratual.

· **Frases relevantes**

H225 Líquido e vapor facilmente inflamáveis.

H226 Líquido e vapor inflamáveis.

H302 Nocivo por ingestão.

H304 Pode ser mortal por ingestão e penetração nas vias respiratórias.

H315 Provoca irritação cutânea.

H319 Provoca irritação ocular grave.

H332 Nocivo por inalação.

H336 Pode provocar sonolência ou vertigens.

H361d Suspeito de afectar o nascituro.

H373 Pode afectar os órgãos após exposição prolongada ou repetida.

· **Abreviaturas e acrónimos:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Líquidos inflamáveis – Categoria 2

Flam. Liq. 3: Líquidos inflamáveis – Categoria 3

Acute Tox. 4: Toxicidade aguda – Categoria 4

Skin Irrit. 2: Corrosão/irritação cutânea – Categoria 2

Eye Irrit. 2: Lesões oculares graves/irritação ocular – Categoria 2

Repr. 2: Toxicidade reprodutiva – Categoria 2

STOT SE 3: Toxicidade para órgãos-alvo específicos (exposição única) – Categoria 3

STOT RE 2: Toxicidade para órgãos-alvo específicos (exposição repetida) – Categoria 2

Asp. Tox. 1: Perigo de aspiração – Categoria 1

# Ficha de datos de seguridad

## según 1907/2006/CE, Artículo 31

fecha de impresión 01.06.2022

Revisión: 01.06.2022

### SECCIÓN 1: Identificación de la sustancia o la mezcla y de la sociedad o la empresa

#### · 1.1 Identificador del producto

· **Nombre comercial:** Conductive Silver Pen

· **Número del artículo:** 12644-01, 12644-02

· **UFI:** W7P0-6083-P00T-7CJA

#### · 1.2 Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados

No existen más datos relevantes disponibles.

· **Utilización del producto / de la elaboración** Sustancias químicas de laboratorio

#### · 1.3 Datos del proveedor de la ficha de datos de seguridad

##### · **Fabricante/distribuidor:**

Electron Microscopy Sciences

1560 Industry Road

USA-Hatfield, PA 19440

Tel: 215-412-8400 Fax: 215-412-8450

email: sgkceck@aol.com

www.emsdiasum.com

##### Aname

C/ Perez Galdos no. 2

28693 Quijorna

Madrid, Spain

Tel: +34.91.816.89.50

Fax: +34.91.816.85.94

email: ventas@aname.es

· **Área de información:** Product safety department

#### · 1.4 Teléfono de emergencia:

ChemTrec 1-800-424-9300 Contract CCN7661

1-703-527-3887

### SECCIÓN 2: Identificación de los peligros

#### · 2.1 Clasificación de la sustancia o de la mezcla

· **Clasificación con arreglo al Reglamento (CE) n° 1272/2008**



GHS02 llama

Flam. Liq. 3 H226 Líquidos y vapores inflamables.



GHS08 peligro para la salud

Repr. 2 H361d Se sospecha que daña al feto.

STOT RE 2 H373 Puede provocar daños en los órganos tras exposiciones prolongadas o repetidas.

Asp. Tox. 1 H304 Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.



GHS07

Skin Irrit. 2 H315 Provoca irritación cutánea.

#### · 2.2 Elementos de la etiqueta

· **Etiquetado con arreglo al Reglamento (CE) n° 1272/2008**

El producto se ha clasificado y etiquetado de conformidad con el reglamento CLP.

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# Ficha de datos de seguridad

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Nombre comercial: **Conductive Silver Pen**

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· **Pictogramas de peligro**

GHS02 GHS07 GHS08

· **Palabra de advertencia Peligro**· **Componentes peligrosos a indicar en el etiquetaje:**

tolueno

· **Indicaciones de peligro**

H226 Líquidos y vapores inflamables.

H315 Provoca irritación cutánea.

H361d Se sospecha que daña al feto.

H373 Puede provocar daños en los órganos tras exposiciones prolongadas o repetidas.

H304 Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.

· **Consejos de prudencia**P301+P310 **EN CASO DE INGESTIÓN:** Llamar inmediatamente a un CENTRO DE TOXICOLOGÍA/médico.

P321 Se necesita un tratamiento específico (ver en esta etiqueta).

P331 NO provocar el vómito.

P303+P361+P353 **EN CASO DE CONTACTO CON LA PIEL (o el pelo):** Quitar inmediatamente toda la ropa contaminada. Enjuagar la piel con agua [o ducharse].

P362+P364 Quitar las prendas contaminadas y lavarlas antes de volver a usarlas.

P405 Guardar bajo llave.

P501 Eliminar el contenido o el recipiente conforme a la reglamentación local/regional/nacional/internacional.

· **Datos adicionales:**

El producto contiene: Precursores de explosivos notificables. Puesta a disposición, introducción, posesión y utilización según Reglamento (UE) 2019/1148, Artículo 9.

· **2.3 Otros peligros**· **Resultados de la valoración PBT y mPmB**· **PBT:** No aplicable.· **mPmB:** No aplicable.

### SECCIÓN 3: Composición/información sobre los componentes

· **3.2 Caracterización química: Mezclas**· **Descripción:** Mezcla formada por las sustancias especificadas a continuación con adiciones no peligrosas.· **Componentes peligrosos:**

CAS: 108-88-3 EINECS: 203-625-9	tolueno ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	acetato de butilo ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	propanona ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	etanol ⚠ Flam. Liq. 2, H225	≤2,5%

( se continua en página 3 )

# Ficha de datos de seguridad

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CAS: 110-19-0 EINECS: 203-745-1	acetato de isobutilo ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-43-0 EINECS: 203-767-1	heptan-2-ona ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	≤2,5%
CAS: 141-78-6 EINECS: 205-500-4	acetato de etilo ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	≤2,5%
· <b>SVHC</b>		
67-64-1	propanona	
64-17-5	etanol	

· **Indicaciones adicionales:** El texto de los posibles riesgos aquí indicados se puede consultar en el capítulo 16.

### SECCIÓN 4: Primeros auxilios

#### · 4.1 Descripción de los primeros auxilios

##### · Instrucciones generales:

Los síntomas de intoxicación pueden presentarse después de muchas horas, por lo que se requiere una supervisión médica durante un mínimo de 48 horas después del accidente.

##### · En caso de inhalación del producto:

Suministrar aire fresco; eventualmente hacer respiración artificial, calor. Si los trastornos persisten, consultar al médico.

Las personas desmayadas deben tenderse y transportarse de lado con la suficiente estabilidad.

##### · En caso de contacto con la piel: Lavar inmediatamente con agua y jabón y enjuagar bien.

##### · En caso de con los ojos: Limpiar los ojos abiertos durante varios minutos con agua corriente.

##### · En caso de ingestión: Consultar un médico si los trastornos persisten.

#### · 4.2 Principales síntomas y efectos, agudos y retardados No existen más datos relevantes disponibles.

#### · 4.3 Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente

No existen más datos relevantes disponibles.

### SECCIÓN 5: Medidas de lucha contra incendios

#### · 5.1 Medios de extinción

· **Sustancias extintoras apropiadas:** CO<sub>2</sub>, arena, polvo extintor. No utilizar agua.

· **Sustancias extintoras inapropiadas por razones de seguridad:** Agua a pleno chorro

· **5.2 Peligros específicos derivados de la sustancia o la mezcla** No existen más datos relevantes disponibles.

#### · 5.3 Recomendaciones para el personal de lucha contra incendios

· **Equipo especial de protección:** Colocarse la protección respiratoria.

### SECCIÓN 6: Medidas en caso de vertido accidental

#### · 6.1 Precauciones personales, equipo de protección y procedimientos de emergencia

Llevar puesto equipo de protección. Mantener alejadas las personas sin protección.

#### · 6.2 Precauciones relativas al medio ambiente:

Evitar que penetre en la canalización /aguas de superficie /agua subterráneas.

#### · 6.3 Métodos y material de contención y de limpieza:

Quitar con material absorbente (arena, kieselgur, aglutinante de ácidos, aglutinante universal, aserrín).

Desechar el material contaminado como vertido según item 13.

Asegurar suficiente ventilación.

No enjuagar con agua ni productos de limpieza acuosos.

#### · 6.4 Referencia a otras secciones

Ver capítulo 7 para mayor información sobre una manipulación segura.

( se continua en página 4 )

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Ver capítulo 8 para mayor información sobre el equipo personal de protección.  
Para mayor información sobre cómo desechar el producto, ver capítulo 13.

### SECCIÓN 7: Manipulación y almacenamiento

- **7.1 Precauciones para una manipulación segura**  
Asegurar suficiente ventilación /aspiración en el puesto de trabajo.  
Evitar la formación de aerosoles.
- **Prevención de incendios y explosiones:**  
Mantener alejadas las fuentes de encendido. No fumar.  
Proteger del calor.  
Tomar medidas contra las cargas electrostáticas.
- **7.2 Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades**
- **Almacenamiento:**
- **Exigencias con respecto al almacén y los recipientes:** No se requieren medidas especiales.
- **Normas en caso de un almacenamiento conjunto:** No es necesario.
- **Indicaciones adicionales sobre las condiciones de almacenamiento:**  
Mantener el recipiente cerrado herméticamente.  
Proteger del calor y de la luz directa del sol.
- **7.3 Usos específicos finales** No existen más datos relevantes disponibles.

### SECCIÓN 8: Controles de exposición/protección individual

- **8.1 Parámetros de control**
- **Instrucciones adicionales para el acondicionamiento de instalaciones técnicas:**  
Sin datos adicionales, ver punto 7.

· **Componentes con valores límite admisibles que deben controlarse en el puesto de trabajo:**

<b>108-88-3 tolueno</b>	
LEP	Valor de corta duración: 384 mg/m <sup>3</sup> , 100 ppm Valor de larga duración: 192 mg/m <sup>3</sup> , 50 ppm vía dérmica, VLB, VLI, r
<b>123-86-4 acetato de butilo</b>	
LEP	Valor de corta duración: 724 mg/m <sup>3</sup> , 150 ppm Valor de larga duración: 241 mg/m <sup>3</sup> , 50 ppm VLI
<b>67-64-1 propanona</b>	
LEP	Valor de larga duración: 1210 mg/m <sup>3</sup> , 500 ppm VLB, VLI
<b>64-17-5 etanol</b>	
LEP	Valor de corta duración: 1910 mg/m <sup>3</sup> , 1000 ppm s
<b>110-19-0 acetato de isobutilo</b>	
LEP	Valor de corta duración: 724 mg/m <sup>3</sup> , 150 ppm Valor de larga duración: 241 mg/m <sup>3</sup> , 50 ppm VLI
<b>110-43-0 heptan-2-ona</b>	
LEP	Valor de corta duración: 474 mg/m <sup>3</sup> , 100 ppm Valor de larga duración: 237 mg/m <sup>3</sup> , 50 ppm vía dérmica, VLI

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**141-78-6 acetato de etilo**

LEP Valor de corta duración: 1468 mg/m<sup>3</sup>, 400 ppm  
 Valor de larga duración: 734 mg/m<sup>3</sup>, 200 ppm  
 VLI

· **Componentes con valores límite biológicos:****108-88-3 tolueno**

VLB 0,6 g/g creatinina  
 Muestra: orina  
 Momento de Muestero: Final de la jornada laboral  
 Indicador Biológico: o-Cresol

0,05 mg/l  
 Muestra: sangre  
 Momento de Muestero: Principio de la última jornada de la semana laboral  
 Indicador Biológico: Tolueno

0,08 mg/l  
 Muestra: orine  
 Momento de Muestero: Final de la jornada laboral  
 Indicador Biológico: Tolueno

**67-64-1 propanona**

VLB 50 mg/l  
 Muestra: orina  
 Momento de Muestero: Final de la jornada laboral  
 Indicador Biológico: Acetona

· **Indicaciones adicionales:** Como base se han utilizado las listas vigentes en el momento de la elaboración.· **8.2 Controles de la exposición**· **Equipo de protección individual:**· **Medidas generales de protección e higiene:**

Mantener alejado de alimentos, bebidas y alimentos para animales.

Quitarse de inmediato la ropa ensuciada o impregnada.

Lavarse las manos antes de las pausas y al final del trabajo.

Evitar el contacto con la piel.

Evitar el contacto con los ojos y la piel.

· **Protección respiratoria:**

Si la exposición va a ser breve o de poca intensidad, colocarse una máscara respiratoria. Para una exposición más intensa o de mayor duración, usar un aparato de respiración autónomo.

· **Protección de manos:**

Guantes de protección

El material del guante deberá ser impermeable y resistente al producto / sustancia / preparado.

Ante la ausencia de tests específicos, no se puede recomendar ningún material específico para guantes de protección contra el producto / preparado / mezcla de sustancias químicas.

Selección del material de los guantes en función de los tiempos de rotura, grado de permeabilidad y degradación.

· **Material de los guantes**

La elección del guante adecuado no depende únicamente del material, sino también de otras características de calidad, que pueden variar de un fabricante a otro. Teniendo en cuenta que el producto está fabricado a partir de diferentes materiales, su calidad no puede ser evaluada de antemano, de modo que los guantes deberán ser controlados antes de su utilización.

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· **Tiempo de penetración del material de los guantes**

El tiempo de resistencia a la penetración exacto deberá ser pedido al fabricante de los guantes. Este tiempo debe ser respetado.

· **Protección de ojos:**



Gafas de protección herméticas

### SECCIÓN 9: Propiedades físicas y químicas

· **9.1 Información sobre propiedades físicas y químicas básicas**

· **Datos generales**

· **Aspecto:**

Forma:

Líquido

Color:

Gris

· **Olor:**

Dulzaino (dulzón)

· **Umbral olfativo:**

No determinado.

· **valor pH:**

No determinado.

· **Cambio de estado**

Punto de fusión/punto de congelación:

Indeterminado.

Punto inicial de ebullición e intervalo de ebullición:

126 °C

· **Punto de inflamación:**

24 °C

· **Inflamabilidad (sólido, gas):**

No aplicable.

· **Temperatura de ignición:**

370 °C

· **Temperatura de descomposición:**

No determinado.

· **Temperatura de auto-inflamación:**

El producto no es autoinflamable.

· **Propiedades explosivas:**

El producto no es explosivo; sin embargo, pueden formarse mezclas explosivas de vapor / aire.

· **Límites de explosión:**

Inferior:

1,2 Vol %

Superior:

7 Vol %

· **Presión de vapor a 20 °C:**

6,7 hPa

· **Densidad a 20 °C:**

2 g/cm<sup>3</sup>

· **Densidad relativa**

No determinado.

· **Densidad de vapor**

No determinado.

· **Tasa de evaporación:**

No determinado.

· **Solubilidad en / miscibilidad con agua:**

Poco o no mezclable.

· **Coefficiente de reparto: n-octanol/agua:**

No determinado.

· **Viscosidad:**

Dinámica:

No determinado.

Cinemática:

No determinado.

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· <b>Concentración del disolvente:</b>	
<b>Disolventes orgánicos:</b>	31,1 %
<b>VOC (CE)</b>	31,10 %
· <b>Contenido de cuerpos sólidos:</b> 45,8 %	
· <b>9.2 Otros datos</b> No existen más datos relevantes disponibles.	

### SECCIÓN 10: Estabilidad y reactividad

- **10.1 Reactividad** No existen más datos relevantes disponibles.
- **10.2 Estabilidad química**
- **Descomposición térmica / condiciones que deben evitarse:** No se descompone al emplearse adecuadamente.
- **10.3 Posibilidad de reacciones peligrosas** No se conocen reacciones peligrosas.
- **10.4 Condiciones que deben evitarse** No existen más datos relevantes disponibles.
- **10.5 Materiales incompatibles:** No existen más datos relevantes disponibles.
- **10.6 Productos de descomposición peligrosos:** No se conocen productos de descomposición peligrosos.

### SECCIÓN 11: Información toxicológica

- **11.1 Información sobre los efectos toxicológicos**
- **Toxicidad aguda** A la vista de los datos disponibles, no se cumplen los criterios de clasificación.

· **Valores LD/LC50 (dosis letal /dosis letal = 50%) relevantes para la clasificación:**

#### 108-88-3 tolueno

Oral	LD50	5.000 mg/kg (rat)
Dermal	LD50	12.124 mg/kg (rabbit)
Inhalatorio	LC50/4 h	5.320 mg/l (mouse)

- **Efecto estimulante primario:**
- **Corrosión o irritación cutáneas**  
Provoca irritación cutánea.
- **Lesiones o irritación ocular graves**  
A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Sensibilización respiratoria o cutánea**  
A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Indicaciones toxicológicas adicionales:**
- **Efectos CMR (carcinogenicidad, mutagenicidad y toxicidad para la reproducción)**
- **Mutagenicidad en células germinales**  
A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Carcinogenicidad** A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Toxicidad para la reproducción**  
Se sospecha que daña al feto.
- **Toxicidad específica en determinados órganos (STOT) – exposición única**  
A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Toxicidad específica en determinados órganos (STOT) – exposición repetida**  
Puede provocar daños en los órganos tras exposiciones prolongadas o repetidas.
- **Peligro de aspiración**  
Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.

ES

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**SECCIÓN 12: Información ecológica**

- **12.1 Toxicidad**
- **Toxicidad acuática:** No existen más datos relevantes disponibles.
- **12.2 Persistencia y degradabilidad** No existen más datos relevantes disponibles.
- **12.3 Potencial de bioacumulación** No existen más datos relevantes disponibles.
- **12.4 Movilidad en el suelo** No existen más datos relevantes disponibles.
- **Indicaciones medioambientales adicionales:**
- **Indicaciones generales:**  
Nivel de riesgo para el agua 1 (autoclasificación): escasamente peligroso para el agua  
En estado no diluido o no neutralizado, no dejar que se infiltre en aguas subterráneas, aguas superficiales o en alcantarillados.
- **12.5 Resultados de la valoración PBT y mPmB**
- **PBT:** No aplicable.
- **mPmB:** No aplicable.
- **12.6 Otros efectos adversos** No existen más datos relevantes disponibles.

**SECCIÓN 13: Consideraciones relativas a la eliminación**

- **13.1 Métodos para el tratamiento de residuos**
- **Recomendación:** No debe desecharse con la basura doméstica. No debe llegar al alcantarillado.
- **Embalajes sin limpiar:**
- **Recomendación:** Eliminar conforme a las disposiciones oficiales.

**SECCIÓN 14: Información relativa al transporte**

- **14.1 Número ONU**
- **ADR, IMDG, IATA** UN1263
- **14.2 Designación oficial de transporte de las Naciones Unidas**
- **ADR** 1263 PINTURA
- **IMDG** PAINT, MARINE POLLUTANT
- **IATA** PAINT

· **14.3 Clase(s) de peligro para el transporte**

· **ADR, IMDG**



- **Clase** 3 Líquidos inflamables
- **Etiqueta** 3

· **IATA**



- **Class** 3 Líquidos inflamables
- **Label** 3

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· 14.4 Grupo de embalaje · ADR, IMDG, IATA	III
· 14.5 Peligros para el medio ambiente: · Contaminante marino: · Marcado especial (ADR):	Símbolo (pez y árbol) Símbolo (pez y árbol)
· 14.6 Precauciones particulares para los usuarios · Número de identificación de peligro (Número Kemler): · Número EMS: · Stowage Category	Atención: Líquidos inflamables 30 F-E,S-E A
· 14.7 Transporte a granel con arreglo al anexo II del Convenio MARPOL y el Código IBC	No aplicable.
· Transporte/datos adicionales:	
· ADR · Cantidades limitadas (LQ) · Cantidades exceptuadas (EQ)	5L Código: E1 Cantidad neta máxima por envase interior: 30 ml Cantidad neta máxima por embalaje exterior: 1000 ml
· Categoría de transporte · Código de restricción del túnel	3 D/E
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· "Reglamentación Modelo" de la UNECE:	UN 1263 PINTURA, 3, III

### SECCIÓN 15: Información reglamentaria

· 15.1 Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla

· Directiva 2012/18/UE

· Sustancias peligrosas nominadas - ANEXO I ninguno de los componentes está incluido en una lista

· Categoría Seveso P5c LÍQUIDOS INFLAMABLES

· Cantidad umbral (toneladas) a efectos de aplicación de los requisitos de nivel inferior 5.000 t

· Cantidad umbral (toneladas) a efectos de aplicación de los requisitos de nivel superior 50.000 t

· REGLAMENTO (CE) n° 1907/2006 ANEXO XVII Restricciones: 3, 48

· Directiva 2011/65/UE sobre restricciones a la utilización de determinadas sustancias peligrosas en aparatos eléctricos y electrónicos - Anexo II

ninguno de los componentes está incluido en una lista

· REGLAMENTO (UE) 2019/1148

· Anexo I - PRECURSORES DE EXPLOSIVOS RESTRINGIDOS (Valor límite superior a efectos de la concesión de licencias con arreglo al artículo 5, apartado 3)

ninguno de los componentes está incluido en una lista

· Anexo II - PRECURSORES DE EXPLOSIVOS NOTIFICABLES

67-64-I propanona

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· **Reglamento (CE) no 273/2004 sobre precursores de drogas**

108-88-3	tolueno	3
67-64-1	propanona	3

· **Reglamento (CE) N o 111/2005 por el que establecen normas para la vigilancia del comercio de precursores de drogas entre la Comunidad y terceros países**

108-88-3	tolueno	3
67-64-1	propanona	3

· **Disposiciones nacionales:**

· **Demás disposiciones, limitaciones y decretos prohibitivos**

· **Sustancias altamente preocupantes (SVHC) según REACH, artículo 57**

67-64-1	propanona
64-17-5	etanol

· **15.2 Evaluación de la seguridad química: Una evaluación de la seguridad química no se ha llevado a cabo.**

## SECCIÓN 16: Otra información

Los datos se fundan en el estado actual de nuestros conocimientos, pero no constituyen garantía alguna de cualidades del producto y no generan ninguna relación jurídica contractual.

· **Frases relevantes**

H225 Líquido y vapores muy inflamables.

H226 Líquidos y vapores inflamables.

H302 Nocivo en caso de ingestión.

H304 Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.

H315 Provoca irritación cutánea.

H319 Provoca irritación ocular grave.

H332 Nocivo en caso de inhalación.

H336 Puede provocar somnolencia o vértigo.

H361d Se sospecha que daña al feto.

H373 Puede provocar daños en los órganos tras exposiciones prolongadas o repetidas.

· **Abreviaturas y acrónimos:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Líquidos inflamables – Categoría 2

Flam. Liq. 3: Líquidos inflamables – Categoría 3

Acute Tox. 4: Toxicidad aguda – Categoría 4

Skin Irrit. 2: Corrosión o irritación cutáneas – Categoría 2

Eye Irrit. 2: Lesiones oculares graves o irritación ocular – Categoría 2

Repr. 2: Toxicidad para la reproducción – Categoría 2

STOT SE 3: Toxicidad específica en determinados órganos ( exposición única) – Categoría 3

STOT RE 2: Toxicidad específica en determinados órganos (exposiciones repetidas) – Categoría 2

Asp. Tox. 1: Peligro por aspiración – Categoría 1

# Säkerhetsdatablad

enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

## AVSNITT 1: Namnet på ämnet/blandningen och bolaget/företaget

- **1.1 Produktbeteckning**
- **Handelsnamn:** Conductive Silver Pen
- **Artikelnummer:** 12644-01, 12644-02
- **UFI:** W7P0-6083-P00T-7CJA
- **1.2 Relevanta identifierade användningar av ämnet eller blandningen och användningar som det avråds från**  
Ingen ytterligare relevant information finns till förfogande.
- **Ämnets användning / tillredningen** Laboratoriekemikalier
- **1.3 Närmare upplysningar om den som tillhandahåller säkerhetsdatablad**
- **Tillverkare/leverantör:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: sgkceck@aol.com  
www.emsdiasum.com
- **Område där upplysningar kan inhämtas:** Product safety department
- **1.4 Telefonnummer för nödsituationer:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## AVSNITT 2: Farliga egenskaper

- **2.1 Klassificering av ämnet eller blandningen**
- **Klassificering enligt förordning (EG) nr 1272/2008**



GHS02 flamma

Flam. Liq. 3 H226 Brandfarlig vätska och ånga.



GHS08 hälsofara

Repr. 2 H361d Misstänks kunna skada det ofödda barnet.

STOT RE 2 H373 Kan orsaka organskador genom lång eller upprepad exponering.

Asp. Tox. 1 H304 Kan vara dödligt vid förtäring om det kommer ner i luftvägarna.



GHS07

Skin Irrit. 2 H315 Irriterar huden.

- **2.2 Märkningsuppgifter**
- **Märkning enligt förordning (EG) nr 1272/2008** Produkten är klassificerad och märkt enligt CLP-förordningen.
- **Faropiktogram**



GHS02



GHS07



GHS08

- **Signalord** Fara

(Fortsättning på sida 2)

**Säkerhetsdatablad**  
enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 1)

· **Riskbestämmande komponenter för etikettering:**

toluen

· **Faroangivelser**

H226 Brandfarlig vätska och ånga.

H315 Irriterar huden.

H361d Misstänks kunna skada det ofödda barnet.

H373 Kan orsaka organskador genom lång eller upprepad exponering.

H304 Kan vara dödligt vid förtäring om det kommer ner i luftvägarna.

· **Skyddsangivelser**

P301+P310 VID FÖRTÄRING: Kontakta genast GIFTINFORMATIONSCENTRALEN/läkare.

P321 Särskild behandling (se på etiketten).

P331 Framkalla INTE kräkning.

P303+P361+P353 VID HUDKONTAKT (även håret): Ta omedelbart av alla nedstänkta kläder. Skölj huden med vatten [eller duscha].

P362+P364 Ta av nedstänkta kläder och tvätta dem innan de används igen.

P405 Förvaras inlåst.

P501 Innehållet / behållaren avfallshanteras enligt lokala / regionala / nationella / internationella föreskrifter.

· **Ytterligare uppgifter:**

Produkten innehåller: Sprängämnesprekursorer som omfattas av rapporteringskrav. Tillhandahållande, införsel, innehav och användning enligt förordning (EU) 2019/1148, artikel 9.

· **2.3 Andra faror**· **Resultat av PBT- och vPvB-bedömningen**· **PBT:** Ej användbar.· **vPvB:** Ej användbar.**AVSNITT 3: Sammansättning/information om beståndsdelar**· **3.2 Kemisk karakterisering: Blandningar**· **Beskrivning:** Blandning bestående av nedan upplistade ämnen med ofarliga tillsatser.· **Farliga ingredienser:**

CAS: 108-88-3 EINECS: 203-625-9	toluen ⚠ Flam. Liq. 2, H225; ⚠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ⚠ Skin Irrit. 2, H315; STOT SE 3, H336	>10-≤25%
CAS: 123-86-4 EINECS: 204-658-1	butylacetat ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	>2,5-≤10%
CAS: 67-64-1 EINECS: 200-662-2	acetone ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H302; Eye Irrit. 2, H319; STOT SE 3, H336	>2,5-≤10%
CAS: 64-17-5 EINECS: 200-578-6	etanol ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-19-0 EINECS: 203-745-1	2-metylpropylacetat ⚠ Flam. Liq. 2, H225	≤2,5%
CAS: 110-43-0 EINECS: 203-767-1	heptan-2-on ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332	≤2,5%
CAS: 141-78-6 EINECS: 205-500-4	etylacetat ⚠ Flam. Liq. 2, H225; ⚠ Eye Irrit. 2, H319; STOT SE 3, H336	≤2,5%

· **SVHC**

67-64-1	acetone
64-17-5	etanol

(Fortsättning på sida 3)



# Säkerhetsdatablad

## enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

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**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 2)

· **Ytterligare hänvisningar:** De angivna farohänvisningarnas ordalydelse framgår av kapitel 16.

### AVSNITT 4: Åtgärder vid första hjälpen

#### · 4.1 Beskrivning av åtgärder vid första hjälpen

##### · Allmänna hänvisningar:

Förgiftningssymptom kan uppträda först efter många timmar. Av denna anledning krävs läkarövervakning i minst 48 timmar efter ett olycksfall.

##### · Vid inandning:

Tillförsel av friskluft, i förekommande fall konstgjord andning, värme. Vid ihållande besvär kontakta läkare.

Vid medvetslöshet lägg och transportera patient stabilt i framstupa sidoläge.

##### · Vid kontakt med huden:

Tvätta omedelbart med vatten och tvål och spola därefter noggrant.

##### · Vid kontakt med ögonen:

Spola ögonen öppna i flera minuter under rinnande vatten.

##### · Vid förtäring:

Om besvär kvarstår, kontakta läkare.

#### · 4.2 De viktigaste symptomen och effekterna, både akuta och fördröjda

Ingen ytterligare relevant information finns till förfogande.

#### · 4.3 Angivande av omedelbar medicinsk behandling och särskild behandling som eventuellt krävs

Ingen ytterligare relevant information finns till förfogande.

### AVSNITT 5: Brandbekämpningsåtgärder

#### · 5.1 Släckmedel

##### · Lämpliga släckningsmedel:

CO<sub>2</sub>, sand, släckningspulver. Använd inget vatten.

##### · Släckningsmedel som är olämpliga av säkerhetsskäl:

Vatten med full stråle

#### · 5.2 Särskilda faror som ämnet eller blandningen kan medföra

Ingen ytterligare relevant information finns till förfogande.

#### · 5.3 Råd till brandbekämpningspersonal

##### · Speciell skyddsutrustning:

Använd andningsskyddsutrustning.

### AVSNITT 6: Åtgärder vid oavsiktliga utsläpp

#### · 6.1 Personliga skyddsåtgärder, skyddsutrustning och åtgärder vid nödsituationer

Använd skyddsutrustning. Håll oskyddade personer på avstånd.

#### · 6.2 Miljöskyddsåtgärder:

Förhindra produkten att tränga ner i avloppsnät/ytvatten/grundvatten.

#### · 6.3 Metoder och material för inneslutning och sanering:

Sug upp med vätskebindande material (sand, kiselgur, syrabindemedel, universalbindemedel, sågspån).

Omhändertat förorenat material som avfall enligt punkt 13.

Se till att ventilationen är tillräcklig.

Spola ej bort med vatten eller vattenhaltiga rengöringsmedel.

#### · 6.4 Hänvisning till andra avsnitt

Information beträffande säker hantering se kapitel 7.

Information beträffande personlig skyddsutrustning se kapitel 8.

Information beträffande avfallshantering se kapitel 13.

### AVSNITT 7: Hantering och lagring

#### · 7.1 Försiktighetsmått för säker hantering

Sörj för god ventilation/utsug på arbetsplatsen.

Undvik bildning av aerosol.

#### · Hänvisningar beträffande brand- och explosionsskydd:

Håll åtskild från antändningskällor - rök ej.

(Fortsättning på sida 4)

**Säkerhetsdatablad**  
enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 3)

Skyddas mot värme.

Vidta åtgärder mot elektrostatisk uppladdning.

· **7.2 Förhållanden för säker lagring, inklusive eventuell oförenlighet**· **Lagring:**· **Krav på lagerutrymmen och behållare:** Inga speciella krav.· **Hänvisningar beträffande sammanlagring:** Erfordras ej.· **Ytterligare uppgifter till lagringsvillkoren:**

Förvara behållaren tätt tillsluten.

Skyddas mot värme och direkt solljus.

· **7.3 Specifik slutanvändning** Ingen ytterligare relevant information finns till förfogande.**AVSNITT 8: Begränsning av exponeringen/personligt skydd**· **8.1 Kontrollparametrar**· **Ytterligare hänvisningar beträffande utformning av tekniska anläggningar:** Inga övriga uppgifter, se punkt 7.· **Ämnen med yrkeshygieniska gränsvärden som bör övervakas:****108-88-3 toluen**

OEL	Korttidsvärde: 384 mg/m <sup>3</sup> , 100 ppm
	Nivågränsvärde: 192 mg/m <sup>3</sup> , 50 ppm
	B, H

**123-86-4 butylacetat**

OEL	Korttidsvärde: 723 mg/m <sup>3</sup> , 150 ppm
	Nivågränsvärde: 241 mg/m <sup>3</sup> , 50 ppm

**67-64-1 aceton**

OEL	Korttidsvärde: 1200 mg/m <sup>3</sup> , 500 ppm
	Nivågränsvärde: 600 mg/m <sup>3</sup> , 250 ppm
	V

**64-17-5 etanol**

OEL	Korttidsvärde: 1900 mg/m <sup>3</sup> , 1000 ppm
	Nivågränsvärde: 1000 mg/m <sup>3</sup> , 500 ppm
	V

**110-19-0 2-metylpropylacetat**

OEL	Korttidsvärde: 723 mg/m <sup>3</sup> , 150 ppm
	Nivågränsvärde: 241 mg/m <sup>3</sup> , 50 ppm

**110-43-0 heptan-2-on**

OEL	Korttidsvärde: 475 mg/m <sup>3</sup> , 100 ppm
	Nivågränsvärde: 120 mg/m <sup>3</sup> , 25 ppm

**141-78-6 etylacetat**

OEL	Korttidsvärde: 1100 mg/m <sup>3</sup> , 300 ppm
	Nivågränsvärde: 500 mg/m <sup>3</sup> , 150 ppm

· **Ytterligare hänvisningar:** De vid framställningen gällande listorna har använts som utgångspunkt.· **8.2 Begränsning av exponeringen**· **Personlig skyddsutrustning:**· **Allmänna skydds- och hygienåtgärder:**

Undvik kontakt med livsmedel, drycker och fodermedel.

Nedsmutsade, indränkta klädesplagg skall omedelbart tas av.

Tvätta händerna före raster och efter arbetet.

Undvik kontakt med huden.

(Fortsättning på sida 5)

## Säkerhetsdatablad

### enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

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**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 4)

Undvik kontakt med ögonen och huden.

· **Andningsskydd:**

Vid kortvarig eller ringa belastning - använd andningsfilterutrustning; vid intensiv resp. längre exponering - använd andningsskyddsutrustning som är oberoende av omgivningsluften.

· **Handskydd:**



Skyddshandskar

Handskmaterialet måste vara tätt och beständigt mot produkt/ämne/tillredning.

Handskmaterialrekommendationer kan inte ges för produkt/tillredning/kemikalielösning, då inga tester genomförts.

Val av handskmaterial beaktande penetrationstider, permeationskvoter och degradation.

· **Handskmaterial**

Val av lämplig handske är inte enbart beroende av material utan även av andra kvalitetskriterier och varierar från en tillverkare till nästa. Då produkten bereds av flera material, kan handskmaterialets beständighet inte förutses och måste därför kontrolleras före användningen.

· **Handskmaterialets penetreringstid**

Exakt penetrationstid fastställs av skyddshandskarnas tillverkare och skall beaktas.

· **Ögonskydd:**



Tättslutande skyddsglasögon

### AVSNITT 9: Fysikaliska och kemiska egenskaper

· **9.1 Information om grundläggande fysikaliska och kemiska egenskaper**

· **Allmänna uppgifter**

· **Utseende:**

<b>Form:</b>	Vätska
<b>Färg:</b>	Grå
<b>Lukt:</b>	Sötaktig
<b>Lukttröskel:</b>	Ej bestämd.

· **pH-värde:** Ej bestämd.

· **Tillståndändring**

<b>Smältpunkt/frys punkt:</b>	Ej bestämd.
<b>Initial kokpunkt och kokpunktsintervall:</b>	126 °C

· **Flampunkt:** 24 °C

· **Brandfarlighet (fast form, gas):** Ej användbar.

· **Tändtemperatur:** 370 °C

· **Sönderfallstemperatur:** Ej bestämd.

· **Självantändningstemperatur:** Produkten är ej självantändande.

· **Explosiva egenskaper:** Produkten är ej explosionsfarlig, men bildning av explosionsfarliga ångluft-blandningar är möjlig.

· **Explosionsgränser:**

<b>Nedre:</b>	1,2 Vol %
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(Fortsättning på sida 6)

**Säkerhetsdatablad**  
enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 5)

· Övre:	7 Vol %
· Ångtryck vid 20 °C:	6,7 hPa
· Densitet vid 20 °C:	2 g/cm <sup>3</sup>
· Relativ densitet	Ej bestämd.
· Ångdensitet	Ej bestämd.
· Avdunstningshastighet:	Ej bestämd.
· Löslighet i / blandbarhet med Vatten:	Ej resp. föga blandbar.
· Fördelningskoefficient: n-oktanol/vatten:	Ej bestämd.
· Viskositet:	
Dynamisk:	Ej bestämd.
Kinematisk:	Ej bestämd.
· Lösningsmedelhalt:	
Organiska lösningsmedel:	31,1 %
VOC (EG)	31,10 %
Andel av fasta partiklar:	45,8 %
· 9.2 Annan information	Ingen ytterligare relevant information finns till förfogande.

**AVSNITT 10: Stabilitet och reaktivitet**

- 10.1 Reaktivitet Ingen ytterligare relevant information finns till förfogande.
- 10.2 Kemisk stabilitet
- Termisk sönderdelning / förhållanden som bör undvikas: Inget sönderfall vid ändamålsenlig användning.
- 10.3 Risken för farliga reaktioner Inga farliga reaktioner kända.
- 10.4 Förhållanden som ska undvikas Ingen ytterligare relevant information finns till förfogande.
- 10.5 Oförenliga material: Ingen ytterligare relevant information finns till förfogande.
- 10.6 Farliga sönderdelningsprodukter: Inga farliga sönderfallsprodukter kända.

**AVSNITT 11: Toxikologisk information**

- 11.1 Information om de toxikologiska effekterna
- Akut toxicitet Kriterierna för klassificering kan på grundval av tillgängliga data inte anses vara uppfyllda.

## · Klassificeringsrelevanta LD/LC50-värden:

**108-88-3 toluen**

Oral	LD50	5.000 mg/kg (rat)
Dermal	LD50	12.124 mg/kg (rabbit)
Inhalativ	LC50/4 h	5.320 mg/l (mouse)

- Primär reningseffekt:
- Frätande/irriterande på huden  
Irriterar huden.
- Allvarlig ögonskada/ögonirritation  
Kriterierna för klassificering kan på grundval av tillgängliga data inte anses vara uppfyllda.
- Luftvägs-/hudsensibilisering  
Kriterierna för klassificering kan på grundval av tillgängliga data inte anses vara uppfyllda.

(Fortsättning på sida 7)

# Säkerhetsdatablad

## enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 6)

- **Ytterligare toxikologiska hänvisningar:**
- **CMR-effekter (cancerframkallande, mutagena och reproduktionstoxiska egenskaper)**
- **Mutagenitet i könsceller**  
Kriterierna för klassificering kan på grundval av tillgängliga data inte anses vara uppfyllda.
- **Cancerogenitet** Kriterierna för klassificering kan på grundval av tillgängliga data inte anses vara uppfyllda.
- **Reproduktionstoxicitet**  
Misstänks kunna skada det ofödda barnet.
- **Specifik organtoxicitet – enstaka exponering**  
Kriterierna för klassificering kan på grundval av tillgängliga data inte anses vara uppfyllda.
- **Specifik organtoxicitet – upprepad exponering**  
Kan orsaka organskador genom lång eller upprepad exponering.
- **Fara vid aspiration**  
Kan vara dödligt vid förtäring om det kommer ner i luftvägarna.

### AVSNITT 12: Ekologisk information

- **12.1 Toxicitet**
- **Akvatisk toxicitet:** Ingen ytterligare relevant information finns till förfogande.
- **12.2 Persistens och nedbrytbarhet** Ingen ytterligare relevant information finns till förfogande.
- **12.3 Bioackumuleringsförmåga** Ingen ytterligare relevant information finns till förfogande.
- **12.4 Rörlighet i jord** Ingen ytterligare relevant information finns till förfogande.
- **Ytterligare ekologiska hänvisningar:**
- **Allmänna hänvisningar:**  
Vattenföroreningsklass 1 (Självtvärdering): liten risk för vattenförorening.  
Låt ej tränga ner i grundvatten, vattendrag eller i avloppsnätet i outspätt tillstånd resp. i större mängder.
- **12.5 Resultat av PBT- och vPvB-bedömningen**
- **PBT:** Ej användbar.
- **vPvB:** Ej användbar.
- **12.6 Andra skadliga effekter** Ingen ytterligare relevant information finns till förfogande.

### AVSNITT 13: Avfallshantering

- **13.1 Avfallsbehandlingsmetoder**
- **Rekommendation:** Får inte deponeras ihop med hushållsavfall. Får inte tömmas i avloppsnätet.
- **Ej rengjorda förpackningar:**
- **Rekommendation:** Avfallshanteras enligt myndigheters föreskrifter.

### AVSNITT 14: Transportinformation

- |  |                         |
|--|-------------------------|
| · <b>14.1 UN-nummer</b>                    |                         |
| · <b>ADR, IMDG, IATA</b>                   | UN1263                  |
| · <b>14.2 Officiell transportbenämning</b> |                         |
| · <b>ADR</b>                               | 1263 FÄRG               |
| · <b>IMDG</b>                              | PAINT, MARINE POLLUTANT |
| · <b>IATA</b>                              | PAINT                   |

(Fortsättning på sida 8)

SE

**Säkerhetsdatablad**  
enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 7)

## · 14.3 Faroklass för transport

## · ADR, IMDG



· Klass 3 Brandfarliga vätskor  
· Etikett 3

## · IATA



· Class 3 Brandfarliga vätskor  
· Label 3

## · 14.4 Förpackningsgrupp

· ADR, IMDG, IATA III

## · 14.5 Miljöfaror:

· Marine pollutant: Symbol (fisk och träd)  
· Särskild märkning (ADR): Symbol (fisk och träd)

## · 14.6 Särskilda skyddsåtgärder

· Farlighetsnummer (Kemler-tal): Varning: Brandfarliga vätskor  
30  
· EMS-nummer: F-E,S-E  
· Stowage Category A

## · 14.7 Bulktransport enligt bilaga II till Marpol 73/78 och IBC-koden

Ej användbar.

## · Transport / ytterligare uppgifter:

## · ADR

· Begränsade mängder (LQ) 5L  
· Reducerade mängder (EQ) Kod: E1  
Högsta nettomängd per innerförpackning: 30 ml  
Högsta nettomängd per ytterförpackning: 1000 ml  
· Transportkategori 3  
· Tunnelrestriktionskod D/E

## · IMDG

· Limited quantities (LQ) 5L  
· Excepted quantities (EQ) Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml

## · UN "Model Regulation":

UN 1263 FÄRG, 3, III

SE

(Fortsättning på sida 9)

**Säkerhetsdatablad**  
enligt förordning (EG) nr. 1907/2006, Artikel 31

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 8)

**AVSNITT 15: Gällande föreskrifter**· **15.1 Föreskrifter/lagstiftning om ämnet eller blandningen när det gäller säkerhet, hälsa och miljö**

- Direktiv 2012/18/EU
- Namngivna farliga ämnen - BILAGA I Inga beståndsdelar är listade.
- Seveso-kategorier P5c BRANDFARLIGA VÄTSKOR
- Tröskelvärden (i ton) för tillämpning av krav för lägre nivå 5.000 t
- Tröskelvärden (i ton) för tillämpning av krav för övre nivå 50.000 t
- Förordning (EG) nr 1907/2006 BILAGA XVII Villkor: 3, 48

· **Direktiv 2011/65/EU om begränsning av användning av vissa farliga ämnen i elektrisk och elektronisk utrustning - Bilaga II**

Inga beståndsdelar är listade.

· **FÖRORDNING (EU) 2019/1148**· **Bilaga I - SPRÄNGÄMNESPREKURSORER SOM OMFATTAS AV RESTRIKTIONER (Övre gränsvärde för beviljande av tillstånd enligt artikel 5.3)**

Inga beståndsdelar är listade.

· **Bilaga II - SPRÄNGÄMNESPREKURSORER SOM OMFATTAS AV RAPPORTERINGSKRAV**

67-64-1 | aceton

· **Förordning (EG) nr 273/2004 om narkotikaprekursorer**

108-88-3 | toluen

3

67-64-1 | aceton

3

· **Förordning (EG) nr 111/2005 om regler för övervakning av handeln med narkotikaprekursorer mellan gemenskapen och tredjeländer**

108-88-3 | toluen

3

67-64-1 | aceton

3

· **Nationella föreskrifter:**· **Övriga föreskrifter, begränsningar och förbudsbestämmelser**· **Ämnen som inger mycket stora betänkligheter (SVHC) enligt REACH, artikel 57**

67-64-1 | aceton

64-17-5 | etanol

· **15.2 Kemikaliesäkerhetsbedömning: En kemikaliesäkerhetsbedömning har ej gjorts.****AVSNITT 16: Annan information**

Uppgifterna är baserade på våra aktuella kunskaper. De representerar emellertid ingen som helst garanti beträffande produktens egenskaper och utgör ingen grund för ett avtalat rättsförhållande.

· **Relevanta fraser**

H225 Mycket brandfarlig vätska och ånga.

H226 Brandfarlig vätska och ånga.

H302 Skadligt vid förtäring.

H304 Kan vara dödligt vid förtäring om det kommer ner i luftvägarna.

H315 Irriterar huden.

H319 Orsakar allvarlig ögonirritation.

H332 Skadligt vid inandning.

H336 Kan göra att man blir dåsig eller omtöcknad.

H361d Misstänks kunna skada det ofödda barnet.

H373 Kan orsaka organskador genom lång eller upprepad exponering.

(Fortsättning på sida 10)

**Säkerhetsdatablad**  
**enligt förordning (EG) nr. 1907/2006, Artikel 31**

Datum för utskrift: 01.06.2022

Omarbetad: 01.06.2022

**Handelsnamn: Conductive Silver Pen**

(Fortsättning från sida 9)

**Förkortningar och akronymer:**

*ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)*  
*IMDG: International Maritime Code for Dangerous Goods*  
*IATA: International Air Transport Association*  
*GHS: Globally Harmonised System of Classification and Labelling of Chemicals*  
*EINECS: European Inventory of Existing Commercial Chemical Substances*  
*ELINCS: European List of Notified Chemical Substances*  
*CAS: Chemical Abstracts Service (division of the American Chemical Society)*  
*VOC: Volatile Organic Compounds (USA, EU)*  
*LC50: Lethal concentration, 50 percent*  
*LD50: Lethal dose, 50 percent*  
*PBT: Persistent, Bioaccumulative and Toxic*  
*SVHC: Substances of Very High Concern*  
*vPvB: very Persistent and very Bioaccumulative*  
*Flam. Liq. 2: Brandfarliga vätskor – Kategori 2*  
*Flam. Liq. 3: Brandfarliga vätskor – Kategori 3*  
*Acute Tox. 4: Akut toxicitet – Kategori 4*  
*Skin Irrit. 2: Frätande eller irriterande på huden – Kategori 2*  
*Eye Irrit. 2: Allvarlig ögonskada eller ögonirritation – Kategori 2*  
*Repr. 2: Reproduktionstoxicitet – Kategori 2*  
*STOT SE 3: Specifik organtoxicitet (enstaka exponering) – Kategori 3*  
*STOT RE 2: Specifik organtoxicitet (upprepad exponering) – Kategori 2*  
*Asp. Tox. 1: Fara vid aspiration – Kategori 1*

SE