

Safety data sheet

according to 1907/2006/EC, Article 31

Date Printed 15.03.2022

Version number 1

Revision Date 15.03.2022

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

- **1.1 Product identifier**
- **Trade name: Silver Conductive Pen**
- **Article number: AGG3342**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application of the substance / the preparation:**
For affixing sample to SEM stubs, making instant conductive traces
- **1.3 Details of the supplier of the safety data sheet**
- **Supplier.**
Agar Scientific Ltd
Parsonage Lane
Stansted CM24 8GF
United Kingdom
sales@agarscientific.com
Tel: +44 (0) 1279 813 519
- **Further information obtainable from: Technical Support**
- **1.4 Emergency telephone number: 24 hours: +44 (0)1856 407333**

SECTION 2: Hazards identification

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



flame

Flam. Liq. 2 H225 Highly 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.



environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.



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



GHS09

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- **Signal word** Danger
- **Hazard-determining components of labelling:**
Toluene
- **Hazard statements**
 H225 Highly 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.
 H411 Toxic to aquatic life with long lasting effects.
- **Precautionary statements**
 P101 If medical advice is needed, have product container or label at hand.
 P102 Keep out of reach of children.
 P103 Read carefully and follow all instructions.
 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.
- **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: 7440-22-4	silver	54.0%
EINECS: 231-131-3	☠ Aquatic Chronic 2, H411	
CAS: 108-88-3	Toluene	10.0%
EINECS: 203-625-9	☠ Flam. Liq. 2, H225; ☠ Repr. 2, H361d; STOT RE 2, H373; Asp. Tox. 1, H304; ☠ Acute Tox. 4, H302; Skin Irrit. 2, H315; STOT SE 3, H336	
CAS: 110-19-0	Iso-butyl Acetate	10.0%
EINECS: 203-745-1	☠ Flam. Liq. 2, H225	
CAS: 123-86-4	butyl acetate -norm	10.0%
EINECS: 204-658-1	☠ Flam. Liq. 3, H226; ☠ STOT SE 3, H336	
CAS: 64-17-5	Ethanol	5.0%
EINECS: 200-578-6	☠ Flam. Liq. 2, H225	
CAS: 110-43-0	heptan-2-one	5.0%
EINECS: 203-767-1	☠ Flam. Liq. 3, H226; ☠ Acute Tox. 4, H302; Acute Tox. 4, H332	
CAS: 141-78-6	ethyl acetate	5.0%
EINECS: 205-500-4	☠ Flam. Liq. 2, H225; ☠ Eye Irrit. 2, H319; STOT SE 3, H336	
CAS: 67-63-0	propan-2-ol	1.0%
EINECS: 200-661-7	☠ Flam. Liq. 2, H225; ☠ Eye Irrit. 2, H319; STOT SE 3, H336	

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

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SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:** No adverse effects are anticipated from inhalation.
- **After skin contact:** 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:** Water fog - dried resin only.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
- **5.3 Advice for firefighters**
- **Protective equipment:** Positive pressure self-contained breathing apparatus.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear gloves.
Wear protective gloves and glasses.
- **6.2 Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
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.
- **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.
Open and handle receptacle with care.
Prevent formation of aerosols.
- **Information about fire - and explosion protection:**
The dried resin is combustible, similar to wood. Burning dry resin emits dense, black smoke. As latex, material is not combustible.
Protect against electrostatic charges.
Extinguishing media: Water fog - dried resin only.

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- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
 Keep container tightly sealed.
 Store in cool, dry conditions in well sealed receptacles.
- **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 ³ , 100 ppm Long-term value: 191 mg/m ³ , 50 ppm Sk
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110-19-0 Iso-butyl Acetate

WEL	Short-term value: 903 mg/m ³ , 187 ppm Long-term value: 724 mg/m ³ , 150 ppm
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123-86-4 butyl acetate -norm

WEL	Short-term value: 966 mg/m ³ , 200 ppm Long-term value: 724 mg/m ³ , 150 ppm
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64-17-5 Ethanol

WEL	Long-term value: 1920 mg/m ³ , 1000 ppm
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110-43-0 heptan-2-one

WEL	Short-term value: 475 mg/m ³ , 100 ppm Long-term value: 237 mg/m ³ , 50 ppm Sk
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141-78-6 ethyl acetate

WEL	Short-term value: 1468 mg/m ³ , 400 ppm Long-term value: 734 mg/m ³ , 200 ppm
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67-63-0 propan-2-ol

WEL	Short-term value: 1250 mg/m ³ , 500 ppm Long-term value: 999 mg/m ³ , 400 ppm
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· **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.
- Remove all soiled and contaminated clothing
- Wash hands before breaks and at the end of work.
- Store protective clothing separately.
- 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.

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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

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties
General Information
Appearance:

Form: Fluid
Colour: According to product specification

Odour: Characteristic

Odour threshold: Not determined.

pH-value: Not determined.

Change in condition

Melting point/freezing point: Undetermined.
Initial boiling point and boiling range: 77-78 °C

Flash point: -1 °C

Flammability (solid, gas): Not applicable.

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: Not determined.
Upper: Not determined.

Vapour pressure: Not determined.

Density at 20 °C: 6.06567 g/cm³

Relative density Not determined.

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· Vapour density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with water:	Not miscible or difficult to mix.
· Partition coefficient: n-octanol/water:	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	46.0 %
VOC (EC)	46.00 %
Solids content:	54.0 %
· 9.2 Other information	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	636 mg/kg (rat)
Dermal	LD50	14,100 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)

- **Specific symptoms in biological assay:**
- **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.
- **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.

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- **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.
- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
- **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.
- **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|--|---|
| <ul style="list-style-type: none"> · 14.1 UN-Number · IMDG, IATA | <p>UN1263</p> |
| <ul style="list-style-type: none"> · 14.2 UN proper shipping name · IMDG · IATA | <p>PAINT RELATED MATERIAL
PAINT</p> |
| <ul style="list-style-type: none"> · 14.3 Transport hazard class(es) · ADR <div style="display: flex; align-items: center; gap: 20px;">   </div> | |
| <ul style="list-style-type: none"> · Class · Label | <p>3 Flammable liquids.
3</p> |

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· IMDG, IATA


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

· **14.4 Packing group**
 · **ADR, IMDG, IATA** III

· **14.5 Environmental hazards:**
 · **Special marking (ADR):** Symbol (fish and tree)

· **14.6 Special precautions for user** Warning: Flammable liquids.
 · **Hazard identification number (Kemler code):** 33
 · **EMS Number:** F-E, S-E
 · **Stowage Category** B

· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** Not applicable.

· Transport/Additional information:

· **ADR**
 · **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":** Void

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**
 E2 Hazardous to the Aquatic Environment
 P5c FLAMMABLE LIQUIDS
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 200 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 500 t
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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SECTION 16: Other information

This information is based on our present knowledge and should assist the user with the safe handling of this material when properly applied. 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.
- H411 Toxic to aquatic life with long lasting effects.

- **Department issuing SDS:** Sales department

- **Contact:**

sales@agarscientific.com
Tel: +44 (0) 1279 813 519

- **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
 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
 Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

- *** Data compared to the previous version altered.**