

Safety Data Sheet (SDS)

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PrintCB *CopPair*

Product type: Two component (Metallic mixture + Activating solution) conductive ink

Identified uses: Copper-based, conductive ink for Printed Electronics

CAS: N/A

Manufacturer: PrintCB Ltd.

Company address: PrintCB, 13 Hamazmera Street, Nes-Ziona, Israel

Email: info@printcb.com

Emergency phone: please contact your closest clinic

2. HAZARDS IDENTIFICATION

Classification of mixture:

2.1. Classification according to regulation (EC) No 1272/2008 [CLP]

| Type of Hazard | Hazard Statement | Hazard Code | Category |
|----------------|---|-------------|----------|
| Physical | Flammable liquid and vapor | H226 | 3 |
| Health | Harmful if swallowed | H302 | 4 |
| Health | Causes mild skin irritation | H316 | 3 |
| Health | May cause allergy or asthma symptoms or breathing difficulties if inhaled | H334 | 1 |
| Environmental | May cause long lasting harmful effects to aquatic life | H413 | 4 |

2.2. Signal Elements





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Hazard statements:

H226, Flammable liquid and vapor

H302, Harmful if swallowed

H316, Causes mild skin irritation

H334, May cause allergy or asthma symptoms or breathing difficulties if inhaled

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

H413, May cause long lasting harmful effects to aquatic life

Supplementary statement(s): not applicable

Precautionary Statements

Prevention:

P210, Keep away from heat/sparks/open flames/hot surfaces - No smoking

P233, Keep container tightly closed.

P261, Avoid breathing dust/fume/gas/mist/vapors/spray

P262, Do not get in eyes, on skin, or on clothing.

Response Statements

P301+P310, IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P302+P352, IF ON SKIN: Wash with plenty of soap and water.

P304+P341, IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+351+P338, IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P370+P378: In case of fire use Foam, dry chemical or carbon dioxide for extinction.

Storage Statement

P404, Store in a closed container.

Disposal Statement

P501, Dispose of contents/container in accordance with local regulation.

2.3. Other Hazards

This mixture does not contain any Substances of Very High Concern (SVHC).



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3. COMPOSITION/INFORMATION ON INGREDIENTS

| HAZARDOUS COMPONENTS | CAS NUMBER | PERCENTAGE %* | Classification according to regulation (EC) 1272/2008 |
|---|------------------------------------|--------------------------|---|
| Component 1: Metallic mixture Copper particles | 7440-50-8 | 30-70 | Unclassified |
| Component 2: Activating solution Diethylene Glycol Dimethyl Ether | 111-46-6 Unavailable 64-19-7 | 10-30 0.1-30 10-20 | H302, H373 Unclassified Flam. Liq. 3, H226 Skin Irrit. 2; H315 Eye Irrit. 2; H319 |
| Natural Rosin Ethanoic Acid | | | |

* Exact percentages may vary or are trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASUREMENTS

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. If symptoms develop and persist, get medical attention.

Skin contact: Remove contaminated clothing and footwear. Immediately flush skin with plenty of water (using soap, if available). If symptoms develop and persist, get medical attention. Wash clothing before reuse.

Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Ingestion: DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention

Notes to physician: Aspiration may cause pulmonary edema or aspiration pneumonia.

5. FIRE FIGHTING MEASURES

Extinguishing media: Foam, dry chemical or carbon dioxide.

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: Vapors may form explosive mixtures with air.

Hazardous combustion products: Thermal decomposition can lead to release of irritating gases and vapors.



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6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not allow product to enter sewer or waterways.

Clean-up methods: Evacuate personnel to safe areas. Remove all sources of ignition. Wear suitable protective clothing, gloves and eye/face protection. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Precautions for Safe Handling: Use only with adequate ventilation. Keep away from heat, spark and flame.

Wear suitable protective clothing, gloves and eye/face protection. Keep container closed. Empty containers retain product residue, so obey hazard warnings and handle empty containers as if they were full. Wash thoroughly after handling.

Conditions for Safe Storage: For safe storage, store between 10 °C (59°F) and 30 °C (86°F). Store away from ignition sources. Keep away from heat, spark and flame. Store in original container until ready to use. Don't keep in refrigeration.

For information on product shelf life, please check the Technical Data Sheet.

8. Exposure Controls/Personal Protection

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Engineering Controls: Ensure adequate ventilation. Mixing of the two components should be processed inside a chemical hood to avoid inhalation of airborne particles. Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits during use.

Eye protection: safety goggles should be used at all times.

Skin Protection: chemical resistant, impermeable gloves should be used at all times. Note, the material may produce skin sensitization in predisposed individuals. Care must be taken when removing gloves and other protective equipment to avoid all possible skin contact

Personal protection*:



***Face protection:** protection mask should be used during the preparation of the two components mixture to avoid inhalation of micro particles.

Occupational exposure limits (EOL):

| Source | Ingredient | Material's name | TWA | STEL | Peak | Notes |
|--------|---------------|------------------------|---------------------|------|------|---------|
| NIOSH | Copper powder | Copper (dust and mist) | 1 mg/m ³ | N/A | N/a | As dust |

9. PHYSICAL AND CHEMICAL PROPERTIES*

*Properties of *CopPair* paste after mixture of the two components

| | Mixed Composition Properties |
|--|--|
| Physical state | Paste |
| color | Reddish (as paste), Red/Grey after sintering |
| Odor | Faint |
| pH | 3 |
| Melting point | Not applicable |
| Boiling point | 162°C |
| Flash point | 60°C |
| Evaporation rate | 0.36 (Butyl Acetate =1) |
| Flammability (solid, gas) | Flammable |
| Lower and upper explosive (flammable) limits | Not available |
| Vapor pressure | 2.96 mm Hg at 25°C |
| Vapor density | Relative vapor density (air = 1): 4.6 |
| Relative density | 5 |
| Solubility | Miscible in water |
| Partition coefficient: | Not available |
| Auto-ignition temperature | Not available |
| Decomposition temperature | Not available |
| Viscosity @ 20°C (Brookfield, T bar) | 5,000-10,000cP |



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10. SAFETY AND REACTIVITY

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

Chemical stability: the product is stable as two separate parts for 6 months and has a 24 hours pot life (as a paste) after which viscosity will gradually increase.

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

11. TOXICOLOGICAL INFORMATION

Acute Toxicity: no data available

Relevant routes of exposure: Skin, Inhalation, Eyes, Ingestion

Potential Health Effects/Symptoms (during preparation and use):

Ingestion: may be harmful if swallowed.

Inhalation: Inhalation of processing fumes may be harmful. Aspiration may cause lung damage. Vapor overexposure may cause drowsiness. Dizziness.

Skin contact: May cause skin irritation.

Sensitization: may cause skin sensitization.

Eye contact: Causes serious eye irritation.

Ingestion: Aspiration may occur during swallowing or vomiting, resulting in lung damage. This product may be fatal if it is swallowed.

Specific Target Organ Toxicity – Single Exposure (STOT – SE): data not available

Specific Target Organ Toxicity – Repeated Exposure (STOT – RE): data not available

Carcinogenicity: data unavailable

ACGIH/IARC/NPT/OSHA Classifications: Not classified

12. ECOLOGICAL INFORMATION

May cause long lasting harmful effects to aquatic life.

Do NOT allow product to come into contact with surface waters or to intertidal areas below the mean high water mark. Do NOT contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on-site or at approved waste sites.



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13. DISPOSAL CONSIDERATIONS

Recommended method of disposal and waste: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: undetermined

14. TRANSPORT INFORMATION

Metallic Mixture

UN number: 3089

Class: 4.1

Proper shipping name: Metal Powder (flammable)

Packing group: II

EU tariff # 7406 10 00

Activating Solution

UN number: 3271

Class: 3

Proper shipping name: ETHERS, N.O.S.*

Packing group: III

EU tariff # 3208 10 10

15. REGULATORY INFORMATION

All components are listed or are exempt from listing on the Toxic Substances Control Act (TSCA).

16. OTHER INFORMATION

This SDS is a Hazard Communication document and should be used in assessing risk. Many factors will determine whether the reported hazards are risks in the workplace or other settings. Risks may be determined by reference to Exposure Scenarios. To the best of our knowledge, the information contained herein is accurate and meets all State and Federal guidelines and EC Directive 1272/2008. However, PrintCB Ltd. does not assume any liability whatsoever for the accuracy or completeness of the information contained herein. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. Final determination of the suitability of any material is the sole responsibility of the user.

SDS prepared 16th of January, 2019.