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SECTION 1: PRODUCT AND COMPANY INFORMATION

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| Product Name: | Conductive Electroplating Ink | | |
| Product Use Description: | Preparing printed circuit boards for through-hole electroplating | | |
| Company: | Think & Tinker, Ltd. 579 County Line Rd. Palmer Lake, CO 80133 USA | | |
| Website: | www.thinktink.com | | |
| Email: | support@thinktink.com | | |
| Telephone: | 719-488-9640 | Emergency telephone: | 719-358-1988 |

Section 2: Hazard Identification

Hazard Statements:

H319: May cause serious eye irritation: Category 2A
H320: Causes eye irritation, Category 2B
H335: May cause respiratory irritation Category 3
H410: Very toxic to aquatic life with long lasting effects

Pictograms:



Signal Word: Warning

Precautionary Statements:

P305 + P351 + P338: IF IN EYES Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P304+341: IF INHALED, if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing

Section 3: Composition / Information on Ingredients

| Material | C.A.S No. | Weight Percentage |
|--------------------|-----------|-------------------|
| Proprietary Resins | N/A | <20 |
| Graphite | 7782-42-5 | 5 - 6 |
| Carbon | 1333-86-4 | 3 - 5 |
| Silver | 7440-22-4 | 17 - 20 |

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| Ethylene-glycol-monobutyl-ether-acetate | 112-07-2 | 34 |
| Diethylene glycol monoethyl ether acetate | 112-15-0 | 6 – 13 |
| Dimethyl glutarate | 1119-40-0 | 14 – 22 |
| Dimethyl Succinate | 106-65-0 | <5 |
| Dimethyl adipate | 627-93-0 | <5 |

Section 4: First Aid Measures

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| Inhalation: | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Remove material from skin, eyes, and clothing. Get medical attention. |
| Skin Contact: | Immediately remove with soap and water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. |
| Eye Contact: | Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs. |
| Ingestion: | Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Rinse mouth with water. Consult a physician. |
| Notes to Physician: | N/A |

Section 5: Firefighting Measures

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| Flash Point: | CLOSED CUP: 71.111°C (160°F), OPEN CUP: 87.78°C (190°F) |
| Suitable Extinguishing Media: | Water spray, foam, dry chemical, or carbon dioxide |
| Special Protective Equipment for Firefighters: | Firefighters, and others exposed, wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use. |
| Special Hazards During Firefighting: | None known |
| Hazardous Decomposition: | Carbon monoxide (CO); carbon dioxide |
| Fire Hazards in Presence of Various Substances: | Flammable in presence of open flames and sparks, of heat, of oxidizing materials. |
| Special Remarks on Fire Hazards | When heated to decomposition it emits acrid smoke and irritating fumes. |

Section 6: Accidental Release Measures

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| Personal Precautions: | Use personal protection recommended in section 8. |
| Environmental Precautions: | Keep out of drains and water courses. |
| Methods for Cleanup: | Contain large spills with dikes and transfer the material to appropriate containers for reclamation or disposal. Absorb remaining material or small spills with an inert material and then place in a chemical waste container |

Section 7: Handling and Storage

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| Handling: | Keep container closed. Avoid breathing vapor or mist. Avoid contact with eyes Use with adequate ventilation. |
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| | Wash thoroughly after handling. |
| Storage: | <p>Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use.</p> <p>Avoid all possible sources of ignition (spark or flame).</p> <p>Emptied containers retain vapor and product residue. Observe all recommended safety precautions until container is cleaned, reconditioned or destroyed.</p> <p>The reuse of this material's container for non-industrial purposes is prohibited, and any reuse must be in consideration of the data provided in this material safety data sheet.</p> |

| Section 8: Exposure Controls / Personal Protection | |
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| Eye Protection: | Wear chemical goggles. Have eye flushing equipment available. |
| Hand Protection: | Minimize skin contamination by following good industrial practice. Wearing protective gloves is recommended. Consult the glove/clothing manufacturer to determine the appropriate type glove/clothing for a given application. |
| Skin and Body Protection: | <p>Minimize skin contamination by following good in contaminated skin thoroughly after handling.</p> <p>Safety glasses.</p> <p>Lab coat.</p> <p>Vapor respirator.</p> <p>Be sure to use an approved/certified respirator or equivalent.</p> <p>Gloves.</p> |
| Respiratory Protection: | Avoid breathing vapor or mist. Use approved respiratory protection equipment when airborne exposure limits are exceeded. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer. Use approved respiratory protection equipment when airborne exposure limits are exceeded. |
| Airborne exposure limits: | 1.5 ml/m ³ ; 10 mg/m ³ ; 8-hr TWA (Solvent Only) |
| Ventilation: | Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits. If practical, use local mechanical exhaust ventilation at sources of air contamination such as processing equipment. |
| Engineering Controls: | Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location. |

| Section 9: Physical and Chemical Properties | |
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| Form: | Liquid |
| Color: | Black / metallic silver appearance |
| Odor: | Sweet odor |
| Flash Point: | Closed cup: 71.111°C (160°F). Open cup: 87.78°C (190°F). |
| Auto-ignition Temperature: | 340°C (644°F) |
| Initial Boiling Point: | 191.3°C (376.3°F) |
| Vapor Pressure: | 0 kPa (@ 20°C) |
| Relative Vapor Density: | 5.5 (Air = 1) |
| Evaporation Rate: | Not available |
| Density: | 1.55 gm/cc at 25°C |
| Bulk Density: | Not available |
| Water Solubility: | Soluble in cold water. |

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| | Solubility in water @ 20 deg. C: 15000 mg/l. Soluble in hydrocarbons and organic solvents |
| pH: | Not available |

| Section 10: Stability and Reactivity | |
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| Conditions to Avoid: | Heat, ignition sources (sparks, flames), incompatible materials |
| Materials to Avoid: | Reactive with oxidizing agents. |
| Hazardous Decomposition Products: | Carbon monoxide; carbon dioxide |
| Chemical Stability: | The product is stable |

| Section 11: Toxicological Information | |
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| Routes of Entry | Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion. |
| Toxicity to Animals | Acute oral toxicity (LD50): 2400 mg/kg [Rat]. Acute dermal toxicity (LD50): 1500 mg/kg [Rabbit]. |
| Inhalation: | May cause respiratory tract irritation. It may also affect behavior/central nervous system with nausea, vomiting, headache and other CNS effects |
| Oral Toxicity: | May cause digestive tract irritation with nausea, vomiting, diarrhea. May affect the kidneys (Albuminuria, Hematuria), and behavior/central nervous system (headache, drowsiness, slurred speech, recrudescence stuttering, staggering gait, tremor, changes in personality, blurred vision). |
| Dermal Toxicity: | Slightly hazardous in case of skin contact (irritant) |
| Skin Irritation: | May cause mild skin irritation. It can be absorbed through the skin may affect the kidneys (hematuria), blood (normocytic anemia) and other systemic effects |
| Eye Irritation: | May cause mild eye irritation. |
| Sensitization: | Not known to cause skin sensitization Prolonged or repeated ingestion may affect the urinary system. |

| Section 12: Ecological Information | |
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| Additional Ecological Information (Product): | This product has not been tested for environmental toxicity or biodegradation but is inherently biodegradable. |

| Section 13: Disposal Considerations | |
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| Recover material or dispose (incineration is preferred) in accordance with all applicable federal, state, and local regulations. Material collected with absorbent may be disposed in a permitted landfill in accordance with federal, state, and local regulations. Empty container may retain vapor or product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. | |

| Section 14: Transport Information | |
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| DOT Classification: | Class 9 |
| Proper Shipping Name: | Environmentally hazardous substances, liquid, n.o.s. silver |

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| Section 15: Regulatory Information | |
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| Federal and State Regulations | TSCA 8(b) inventory: 2-Butoxyethyl acetate |
| Other: | OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances |
| HMIS Classification | |
| Health Hazard: | 2 |
| Chronic Health Hazard: | 0 |
| Flammability: | 2 |
| Reactivity: | 0 |
| PPI: | Gloves; Eye protection |
| WHMIS (Canada) | |
| CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). | |
| DSCL (EEC) | |
| S24- Avoid contact with skin. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. R20/21- Harmful by inhalation and in contact with skin. | |
| National Fire Protection Association (NFPA) | |
| Class: | Not regulated |
| Emergency Planning Community Right-to-Know (EPCRA) | |
| SARA 302 Components: | If listed below, this product contains toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372. |
| SARA 313 Components: | CAS-NO. 112-15-2 CAS-NO. 7440-22-4 |
| SARA 311/312 Hazards: | CAS No. 1333-86-4 Delayed (Chronic) Health Hazard Acute Health Hazard |
| Toxic Substances Control Act (TSCA) Status | |
| TSCA Status: | We certify that all of the components of this product are either listed on the TSCA Inventory or are not subject to the notification requirements per 40 CFR 720.30(h). |
| Section 4/12(b): | Not applicable |
| Clean Air Act & Related Information | Not applicable |
| Ozone Depleting Substances: | Not applicable |
| Hazardous Air Pollutants: | If not listed below, this product does not contain HAPs at 1% or 0.1% or greater. Refer to Section 3 of HAP weight percentage. |
| Resource Conservation & Recovery Act | |
| EPA Hazardous Waste Code(s): | Not applicable |
| State Laws | |
| California Prop. 65 Components: | Not applicable |
| CONEG Heavy Metal: | We certify that this product does not contain Lead, Mercury, Cadmium or Hexavalent Chromium in the sum concentration of 100 ppm by weight or greater. |
| Massachusetts Right-to-Know Components: | Not applicable |
| Pennsylvania Right-to-Know Components: | CAS-NO. 112-15-2 |
| New Jersey Right-to-Know Components: | CAS-NO. 112-15-2 |
| New Jersey Trade Secret Registry Number for the Product (NJ) | Not applicable |

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| TSRN): | |
| Coalition of Northeastern Governors (CONEG) Heavy Metal: | We certify that this product does not contain Lead, Mercury, Cadmium or Hexavalent Chromium in the sum concentration of 100 ppm by weight or greater. |
| International | |
| RoHS 2 2011/65/EU | Think & Tinker, Ltd. products do not exceed the amount of allowable levels concerning: Cadmium (Cd); Hexavalent Chromium (C); Mercury (Hg); Lead (Pb); Polybrominated Biphenyls (PBB's) as bromid; Polybrominated Diphenyl Ethers (PBDEs) as bromide, decaBDE |
| Registration, Evaluation and Authorization of Chemicals (EU - REACH) & Substances of Very High Concern (SVHC) | This product does not contain substances on the SVHC list. |
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| Section 16: Other Information | |
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| Product Designations: | CH29-0000-50 Conductive Electroplating Ink CH29-0000-100 Conductive Electroplating Ink CH29-0000-250 Conductive Electroplating Ink CH29-0000-500 Conductive Electroplating Ink CH29-0000-1000 Conductive Electroplating Ink |
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