

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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PRODUCT TRADE NAME:

SILVERPOLY DELETION PEN

Product Use:

Image deletion pen for silver-based polyester and paper plates.

2. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical Name	% by Wt Range	CAS Number	EXPOSURE LIMITS 8 hr. TWA (PPM)	
			OSHA PEL	ACGIH TLV
Ethyl alcohol (=Ethanol)	10.00-20.00	64-17-5	1000 ppm	1000 ppm
Thiourea	1.00-5.00	62-56-5	N/D	N/D
Ferric chloride, hexahydrate	1.00-5.00	10025-77-1	None	None
Water	50.00-80.00	7732-18-5	None	None

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW

“Ink” in pen is a clear, colorless liquid with ethanol odor.

Ethanol (CAS No. 64-17-5):
 Physical dangers: The vapor mixes well with air, explosive mixtures are easily formed. Chemical dangers: Reacts slowly with calcium hypochlorite, silver oxide and ammonia, causing fire and explosion hazard. May cause eye digestive, and respiratory tract irritation. Ingestion may cause central nervous system effects, cardiopulmonary effects and kidney effects. Symptoms include: Convulsions, acidosis, coma, irregular heart beat, heat and kidney failure. This product has caused adverse birth and reproductive effects. Target Organs: Central nervous system, kidneys, heart, respiratory systems.

Thiourea(CAS No. 62-56-5): Chronic overexposure may cause liver and kidney damage. There may be no safe level of exposure to a carcinogen, so all contact should be reduced to the lowest possible level.

HMIS HAZARD CLASS

HEALTH	(Blue)	2
FLAMMABILITY	(Red)	3
REACTIVITY	(Yellow)	1
PROTECTIVE EQUIPMENT		C

HAZARD INDEX:

0=Minimal Hazard 1=Slight Hazard C: Safety gloves, goggles and apron.
 2=Moderate Hazard 3=Serious Hazard 4=Severe Hazard

POTENTIAL HEALTH EFFECTS

EYES: Exposure may cause eye irritation, redness, pain, and burning.

SKIN CONTACT: Exposure may cause skin irritation. Symptoms may include redness, burning, drying and cracking, skin burns, and skin damage.

INGESTION: May cause nausea and vomiting. Toxicity effects may include paralysis of eye muscles, convulsions, rapid heart beat, kidney abnormalities, and possible cardiac failure. This material can enter the lungs during swallowing or vomiting and cause lung inflammation and/or damage.

INHALATION: May cause respiratory tract irritation. Heated or misted substance may cause headache, irregular eye movements, and possible coma.

CHRONIC (CANCER) INFORMATION: May have the potential for causing reproductive damage in human.

ACUTE EFFECTS: Ethanol in this product may irritates the eyes. Inhalation of high concentration of vapor may cause irritation of the eyes and respiratory tract. May cause effects on the central nervous system.

OTHER HEALTH HAZARDS: Long-term or repeated exposure may dry the skin. Ethanol in this product may have effects on the upper respiratory tract and central nervous system, resulting in irritation, headache, fatigue and lack of concentration. Chronic ingestion of ethanol may cause liver cirrhosis. International misuse by deliberately concentrating & inhaling this product may be harmful or fatal.

4. FIRST AID MEASURES:

EYES: First rinse with plenty of water for at least 15 minutes (remove contact lenses if easily possible), then get medical help.

SKIN: Remove contaminated clothes. Rinse and then wash skin with water and soap. Get medical help if irritation develops and persists.

INGESTION: Rinse mouth. Refer for medical attention.

INHALATION: Remove to fresh air and rest.

NOTE TO PHYSICIAN: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES:

FLASH POINT: N/D.

LOWER EXPLOSIVE LIMITS: 3.3% (Ethanol) **UPPER EXPLOSIVE LIMITS:** 19% (Ethanol)

EXTINGUISHING MEDIA: Use powder, alcohol-resistant foam, water in large amounts, carbon dioxide.

FIRE FIGHTING INSTRUCTIONS: Firemen should wear a self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment.

FIRE & EXPLOSION HAZARDS: This product is combustible and may be ignited by heat or flame.

6. ACCIDENTAL RELEASE MEASURES:

*****Large Spills***** Eliminate potential sources of ignition. Wear appropriate respirator and other protective clothing. Shut off source of leak only if it is safe to do so. Prevent from entering drains, sewer, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to a non-leaking containers and seal tightly for proper disposal. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal.

SILVERPOLY DELETION PEN

7. HANDLING AND STORAGE: Cause eye and skin irritation. Do not get in eyes, on skin, on clothing. Avoid ingestion and inhalation. Wash thoroughly after handling. Keep away from sources of ignition. "Empty containers retain product residue, (liquid and / vapor), and can be dangerous". Do not cut, weld, pressurize, braze, solder, grind, drill, or expose such containers to heat, sparks or open flames. Empty drums should be completely drained, properly bunged, and promptly returned and disposed of. Prevent build up of vapors to explosive concentration. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Use with adequate ventilation. Maintain good housekeeping. FOR INDUSTRIAL USE ONLY. "KEEP OUT OF REACH OF CHILDREN".

8. EXPOSURE CONTROLS, PERSONAL PROTECTION:

Engineering controls: Local exhaust ventilation may be necessary to keep airborne concentrations below the permissible exposure limits-SEE SECTION 2. Use explosion-proof ventilation as required to control vapor concentrations.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

RESPIRATORY PROTECTION: Avoid prolonged or repeated breathing of vapors. If exposure may or does exceed occupational exposure limits (Sec. 2) use a NIOSH-Approved respirator to prevent overexposure. In accord with 29 CFR 1910.134. Use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

EYE PROTECTION: Use safety glasses or goggles as appropriate (29 CFR 1910.133).

SKIN: Wear solvent resistant gloves.

OTHER CLOTHING AND EQUIPMENT: It is suggested that a source of clean water be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Appearance: Clear, colorless liquid. **Odor:** Ethanol odor.

Boiling Point: 80°C

Vapor Density: >1

Solubility in Water: Miscible **Specific Gravity:** 1.04-1.05

Melting Point: 115°C

Vapor Pressure: 45mmHg

10. STABILITY AND REACTIVITY:

STABILITY: Stable at room temperature in closed containers under normal storage and handling conditions.

CONDITIONS TO AVOID: High heat, ignition sources, open flame.

HAZARDOUS POLYMERIZATION: Has not been reported.

INCOMPATIBILITY WITH OTHER MATERIALS: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, and various hydrocarbons.

11. TOXICOLOGICAL INFORMATION:

<u>Chemical Name</u>	<u>CAS Number</u>	<u>LC50 PPM (Inhalation rat)</u>	<u>LD 50 mg/kg (Oral-rat)</u>
Ethyl alcohol (=Ethanol)	66-17-5	unknown	unknown
Thiourea	62-56-5	unknown	unknown

12. ECOLOGICAL INFORMATION: N/D.

13. DISPOSAL CONSIDERATIONS: Dispose in a manner consistent with federal, state, and local regulations. Refer to latest EPA or State Regulations regarding proper disposal.

14. TRANSPORT INFORMATION:

IMO: SHIPPING NAME:	Flammable liquids, N.O.S. HAZARD CLASS: 3.3
	UN Number: 1993 Packing Group: III
IATA: SHIPPING NAME:	Flammable liquids, N.O.S.(contains naphtha, petroleum) HAZARD CLASS: 3
	UN Number: 1993 Packing Group: III

15. EXPOSURE LIMITS 8 hr. TWA (PPM):

<u>Chemical Name</u>	<u>% by Wt Range</u>	<u>CAS Number</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Ethyl alcohol (=Ethanol)	25.00-40.00	64-17-5	1000 ppm.	1000 ppm.
Thiourea	1.00-5.00	62-56-5	N/D	N/D

16. OTHER INFORMATION: All information appearing herein is based upon Data obtained from Manufacturer and/or recognized technical sources. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the material are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use, disposal of the material. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his own particular use. To the best of our knowledge, the information contained herein is accurate. However, neither Nikken Chemical Laboratory Co., Ltd., nor any of its distributors assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.