

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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Preparation Date: SEP-3-2008

PRODUCT TRADE NAME:

**Metal Deletion Pen "Type F"
Plate Image Deletion Pen.**

Product Use:

2. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical Name	% by Wt Range	CAS Number	EXPOSURE LIMITS 8 hr. TWA (PPM)	
			OSHA PEL	ACGIH TLV
Dimethyl formamide	33	68-12-2	10 ppm	10 ppm
Tetrahydrofuran	25	109-99-9	200 ppm	200 ppm
Hydrofluoric acid	3	7664-39-3	3 ppm	3 ppm

3. HAZARDS IDENTIFICATION:

EMERGENCY OVERVIEW

"Ink" in pen is a clear, colorless liquid. May produce acrid smoke or fumes in fire conditions. Wear equipment to protect eyes, skin and respiratory tract. Dike or absorb spills to keep material and run-off from entering sewer or waterways. Use water spray to cool containers and disperse vapors. Special handling & work place: Avoid contact with skin & eyes. Do not eat, drink or smoke at work place. Wash hands thoroughly with soap and water. Remove contaminated clothing immediately. Ventilation in work area should be sufficient. Do not take internally.

HMIS HAZARD CLASS

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

HAZARD INDEX:

0=Minimal Hazard 1=Slight Hazard 2=Moderate Hazard 3=Serious Hazard 4=Severe Hazard

POTENTIAL HEALTH EFFECTS

EYES: Contact causes irritation. May cause burns with permanent eye damage.

SKIN CONTACT: Contact causes irritation. May be absorbed through skin and it may cause severe pain and illness. 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: Hydrofluoric acid in this product may be absorbed through skin and it may attack calcium present like bone. Inhalation of high concentration of vapor may cause irritation of the eyes and respiratory tract. May cause effects on the central nervous system.

4. FIRST AID MEASURES:

EYES: Immediately flush with large amounts of water for at least 15 minutes (remove contact lenses if easily possible), then get medical help.

SKIN: Quickly remove contaminated clothes. Immediately wash area with large amounts of water. Get medical help if rash, redness or irritation develops.

INGESTION: Rinse mouth and do not induce vomiting. Get medical help immediately.

INHALATION: Remove to fresh air and rest. If victim is having difficulty breathing, give oxygen if available. If victim is not breathing, start CPR and get immediate medical attention.

NOTE TO PHYSICIAN: Eye exposure to Hydrofluoric acid requires continuous irrigation and immediate ophthalmologist referral. Medical treatment for dermal exposure may include the topical use of 2.5% calcium gluconate gel, benzalkonium chloride (Zephiran) solution (1:750) soaks, and/or 10% calcium gluconate intradermally. Electrocardiographic monitoring is necessary after ingestion, inhalation, or significant dermal exposure due to potential for hypocalcemia and resultant cardiac dysrhythmias.

5. FIRE FIGHTING MEASURES:

FLASH POINT: N/D

LOWER EXPLOSIVE LIMITS: N/D **UPPER EXPLOSIVE LIMITS:** N/D

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.

Metal Deletion Pen "Type F"

7. HANDLING AND STORAGE: Wash hands thoroughly after handling. Avoid contact with skin. Avoid contact with eyes. Avoid breathing mist, dust, vapors or fumes. Harmful if swallowed. Keep caps closed when not in use. Store in cool, dry, well-ventilated area away from sources of ignition and incompatible materials listed in Section 10. 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): Safety gloves, goggles and apron. Be sure that eyewash is at work area.

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:** Acrid HF odor.

Boiling Point: approx. 65°C

Vapor Density: 2.47

Solubility in Water: Miscible **Specific Gravity:** 1.01

Melting Point: N/D

Vapor Pressure: 86 mm Hg at 20°C

10. STABILITY AND REACTIVITY:

STABILITY: Stable at room temperature and hazardous polymerization will not occur if product is used and stored as directed.

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

HAZARDOUS POLYMERIZATION: Has not been reported.

INCOMPATIBILITY WITH OTHER MATERIALS: Strong acids, oxidizing agents.

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

11. TOXICOLOGICAL INFORMATION:

LD50: Not available.

Acute Overexposure: Irritating to skin and eyes by contact. Hydrofluoric acid causes severe, slow-healing burns and may be absorbed through skin. Irritating to respiratory tract if inhaled. May cause headache, dizziness and narcosis. Irritating to gastrointestinal tract if ingested. May cause vomiting, diarrhea and abdominal cramps.

Chronic Overexposure: May cause liver and kidney damage. Hydrofluoric acid is an experimental teratogen. Intentional concentration and inhalation of vapors may cause respiratory stimulation followed by collapse. May cause anemia and leucopenia.

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: Not DOT regulated. Product is labeled in accordance with U.S. 49CFR.

15. REGULATORY INFORMATION:

<u>Ingredient</u>	<u>TSCA</u>	<u>SARA 311/312</u>	<u>SARA 313</u>	<u>Clean Air</u>	<u>Clean Water</u>	<u>CAL Prop 65</u>
Dimethyl formamide	Y	Y	Y	N	Y	N
Tetrahydrofuran	Y	Y	N	N	N	N
Hydrofluoric acid	Y	Y	Y	N	Y	N

Canadian WHMIS classification (for this product): Class B2 flammable liquid and Class D1/A and Class E.0.

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.