1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: 8104 BLACK INK
Product Number: 201-8104
REACH Registration Number: N/A
Identified Use: Marking ink for semiconductor
Uses Advised Against: None identified
Manufacturer: Xandex, Inc.
1360 Redwood Way, Suite A
Petaluma, CA 94954 USA
Web Site: www.xandex.com
E-Mail: beastin@xandex.com
Information Contact: Bill Eastin
Emergency Telephone: (800) 535-5053 (US Domestic)
(352) 323-3500 (International)

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Combustible Liquid, Target Organ Effect, Irritant, Harmful by ingestion, Harmful by skin absorption

Target Organs
Central nervous system, Blood, Liver, Kidney

GHS Classification
Flammable Liquids (Category 3)
Acute toxicity, Oral (Category 4)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Dermal (Category 4)
Skin irritation (Category 2)
Acute aquatic toxicity (Category 2)
Serious eye damage (Category 1)

GHS Label elements, including precautionary statements
Pictogram
Signal Word Danger

Hazard statements
H226 Flammable liquid and vapor
H302 + H312 Harmful if swallowed or in contact with skin
H315 Causes skin irritation
H318 Causes serious eye damage
H331 Toxic if inhaled
H401 Toxic to aquatic life

Precautionary statements
P261 Avoid breathing fume/gas/mist/vapors/spray
P280 Wear protective gloves
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P311 Call a POISON CENTER or doctor/physician

NFPA Rating
Health hazard 2
Fire 2
Reactivity hazard 0

HMIS Classification
Health hazard 2
Flammability 2
Physical hazard 0

Potential Health Effects
Eyes: This product can cause irritation to eyes on contact. Risk of serious damage to eyes.
Skin: This product can cause moderate irritation to skin on contact.
Inhalation: Vapor or mist can cause irritation to the nose and throat.
Ingestion: Harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description
Phenoxy resin and dye based ink mixture.
4. FIRST AID MEASURES

**In case of eye contact:**
Thoroughly flush with water. Call physician immediately.

**In case of skin contact:**
Wash with soap and water.

**In case of inhalation:**
Remove to fresh air.

**In case of ingestion:**
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE FIGHTING MEASURES

**Conditions of flammability:**
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

**Suitable extinguishing media:**
Use water spray, dry chemical, CO₂, alcohol-resistant foam.

**Hazardous combustion products:**
Emits carbon and nitrogen oxides under fire conditions.

**Special protective equipment for fire fighters:**
Wear self-contained breathing apparatus if necessary.
6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Use personal protective equipment. Avoid breathing vapors, mist or gas. Remove all sources of ignition. Ensure adequate ventilation.

Environmental precautions:
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods for cleaning up:
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling:
Avoid contact with skin and eyes. Avoid inhalation of vapor, mist or gas. Remove all sources of ignition.

Conditions for storage:
Store at a temperature of 10-25°C (50-77°F) to maintain maximum shelf life.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Limit value type (country of origin)</th>
<th>Substance name</th>
<th>EC-No</th>
<th>CAS-No</th>
<th>Occupational exposure limit value</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA (USA)</td>
<td>Benzyl alcohol</td>
<td>202-859-9</td>
<td>100-51-6</td>
<td>10 ppm</td>
<td>Workplace Environmental Exposure Levels (WEEL)</td>
</tr>
<tr>
<td>TWA (USA)</td>
<td>Diacetone alcohol</td>
<td>204-626-7</td>
<td>123-42-2</td>
<td>50 ppm</td>
<td>ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>TWA (USA)</td>
<td>Diacetone alcohol</td>
<td>204-626-7</td>
<td>123-42-2</td>
<td>50 ppm 240 mg/m3</td>
<td>NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>TWA (USA)</td>
<td>Diacetone alcohol</td>
<td>204-626-7</td>
<td>123-42-2</td>
<td>50 ppm 240 mg/m3</td>
<td>Occupational Exposure Limits (OSHA)- Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>TWA (USA)</td>
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<td>204-626-7</td>
<td>123-42-2</td>
<td>50 ppm 240 mg/m3</td>
<td>Occupational Exposure Limits (OSHA)- Table Z-1 Limits for Air Contaminants- 1910.1000</td>
</tr>
</tbody>
</table>
Exposure controls

Eye protection
Safety goggles

Respiratory protection
For continuous exposure to large quantities, wear respirator (CEN/NIOSH approved) as required for concentrations of air contaminants encountered.

Skin protection
Chemical resistant gloves. Avoid repeated or prolonged skin exposure.

Hygiene measures
Wash hands thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical State:</th>
<th>Opaque liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Black</td>
</tr>
<tr>
<td>Odor:</td>
<td>Slight alcoholic odor</td>
</tr>
<tr>
<td>Flash Point:</td>
<td>44°C</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>1.067 (Water = 1)</td>
</tr>
<tr>
<td>% Volatile/Non-Volatile (Solids):</td>
<td>78% Volatile / 22% Non-Volatile</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Chemical Stability:</th>
<th>Stable under recommended storage conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to Avoid:</td>
<td>Heat, flames and sparks</td>
</tr>
<tr>
<td>Hazardous Decomposition Products:</td>
<td>Carbon and nitrogen oxides</td>
</tr>
<tr>
<td>Materials to Avoid:</td>
<td>Strong oxidizing agents, strong bases</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Benzyl alcohol

**Oral LD50**
LD50 Oral-rat-1,230 mg/kg

**Inhalation LC50**
No data available

**Dermal LD50**
LD50 Dermal-rabbit-2,000 mg/kg
Diacetone alcohol

**Oral LD50**
LD50 Oral-rat-2,520 mg/kg

**Inhalation LC50**
LC50 Inhalation-rat-4h-1,500 ppm

**Dermal LD50**
LD50 Dermal-rabbit-13,500 mg/kg

Ethyl-3-ethoxypropionate

**Oral LD50**
LD50 Oral-rat-male- >5,000 mg/kg
LD50 Oral-rat-female- 4,309 mg/kg

**Inhalation LC50**
LC50 Inhalation-rat- male-6 h- >998 ppm

**Dermal LD50**
LD50 Dermal-rabbit- male- 4,080 mg/kg
LD50 Dermal-rabbit-female- 4,680 mg/kg

Skin corrosion/irritation

**Benzyl alcohol**
Skin-rabbit-irritating to skin-24h

**Diacetone alcohol**
No data available

**Ethyl-3-ethoxypropionate**
Skin-rabbit-no skin irritation-4h-OECD
Test Guideline 404

Serious eye damage / eye irritation

**Benzyl alcohol**
No data available

**Diacetone alcohol**
Eyes-rabbit-Severe eye irritation-24 h
Ethyl-3-ethoxypropionate
Skin-rabbit-no eye irritation-24 h-OECD Test Guideline 405

Respiratory or skin sensitization

Ethyl-3-ethoxypropionate
Guinea pig- Does not cause skin sensitization-OECD
Test Guideline 406

Germ cell mutagenicity

Ethyl-3-ethoxypropionate
Genotoxicity in-vitro – S. typhimurium – with and without metabolic activation - negative

Carcinogenicity

IARC: No component of this product at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by ACGIH.

NTP: No component of this product at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by NTP.

OSHA: No component of this product at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by OSHA

Reproductive toxicity
No data available

Teratogenicity
No data available

Specific target organ toxicity- single exposure (Globally Harmonized System)
No data available

Specific target organ toxicity- repeated exposure (Globally Harmonized System)
No data available

Aspiration hazard
No data available
Potential health effects

**Ingestion**  
Harmful if swallowed.

**Inhalation**  
May be harmful if inhaled. May cause respiratory tract irritation.

**Skin**  
Harmful if absorbed through skin. Causes skin irritation.

**Eyes**  
Causes eye irritation.

**Signs and Symptoms of Exposure**

Central nervous system depression. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness, blood disorders, dermatitis and blurred vision. The chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

**Synergistic effects**
No data available

### 12. ECOLOGICAL INFORMATION

**Toxicity**

**Benzyl alcohol**

- **Toxicity to fish**: LC50- Lepomis macrochirus (Bluegill)- 10 mg/l – 96 h
- **Toxicity to daphnia and other aquatic invertebrates**: EC50- Daphnia magna (Water Flea)- 55 mg/l – 24 h

**Diacetone alcohol**

- **Toxicity to fish**: LC50- Lepomis macrochirus (Bluegill)- 420 mg/l – 96 h
- **Toxicity to daphnia and other aquatic invertebrates**: EC50- Daphnia magna (Water Flea)- 9,000 mg/l – 24 h

**Ethyl-3-ethoxypropionate**

- **Toxicity to fish**: Static test LC50- Pimephales promelas (Fathead Minnow)- 45.3 mg/l-96 h  
  Method: OECD Test Guideline 203
- **Toxicity to daphnia and other aquatic invertebrates**: Immobilization EC50- Daphnia magna (Water Flea)- 785 mg/l – 48 h 
  Method: OECD Test Guideline 204
- **Toxicity to algae**: Growth inhibition EC50- Selenastrum capricomutum (Green Algae)- >115 mg/l – 72 h  
  Method: OECD Test Guideline 201
- **Toxicity to bacteria**: Growth inhibition EC50- other microorganisms - >5,000 mg/l – 16 h
**Safety Data Sheet**

**Persistence and degradability**

**Benzyl alcohol**

Biodegradability: Biotic/Aerobic

Result: 92-96% - Readily biodegradable

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**PBT and vPvB assessment**

No data available

**Other adverse effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life.

### 13. DISPOSAL CONSIDERATIONS

Contact a professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations in the jurisdiction where the product is used.

### 14. TRANSPORT INFORMATION

**DOT (US)**

UN Number: 1210, Printing Ink, Flammable

Packing Group III

Marine pollutant: No

Poison inhalation hazard: No

**IATA**

UN Number: 1210, Printing Ink, Flammable

Packing Group III

**IMDG**

UN Number: 1210, Printing Ink, Flammable

Packing Group III

Marine pollutant: No

### 15. REGULATORY INFORMATION

**OSHA Hazards**

Combustible Liquid, Target Organ Effect, Harmful by ingestion, Harmful by skin absorption, Irritant

**CERCLA Status:**

Not listed
TSCA Status:
All chemicals used in this product are TSCA listed.

SARA 302:
This product contains no chemicals subject to the notification under SARA Title III, Section 302.

SARA 311/312 Hazards
Acute health hazard, chronic health hazard, fire hazard

SARA 313:
This product contains no chemicals subject to the notification under SARA Title III, Section 313.

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>CAS No.</th>
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<tbody>
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Pennsylvania Right To Know Components

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<td>Diacetone Alcohol</td>
<td>123-42-2</td>
</tr>
<tr>
<td>Ethyl-3-Ethoxypropionate</td>
<td>763-69-9</td>
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New Jersey Right To Know Components

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German Regulations
Water-endangering substances (WGK [water hazard class]): 1

16. OTHER INFORMATION
The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Xandex Incorporated shall not be held liable for any damage resulting from handling or from contact with the above product.

Version 3.4
Revision Date: 02/03/17
Print Date: 02/03/17
Replaces: Version 3.3 Dated 11/04/16