1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: 8103 BLACK INK
Product Number: 201-8103
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 4)
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:
- H227: Combustible liquid
- 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 with a blend of alcohols
Hazardous Ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>EC-No</th>
<th>Index-No</th>
<th>CAS-No</th>
<th>Amount (%)</th>
<th>Classification according to Regulation (EC) No 1272/2008 (CLP)</th>
<th>Classification according to 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzyl Alcohol</td>
<td>202-859-9</td>
<td>603-057-00-5</td>
<td>100-51-6</td>
<td>68</td>
<td>H302 + 312, H315, H332, H401, P280</td>
<td>R20/22, Xn</td>
</tr>
<tr>
<td>Diacetone Alcohol</td>
<td>204-626-7</td>
<td>603-016-00-1</td>
<td>123-42-2</td>
<td>13</td>
<td>H226, H303, H318, H331, P261, P280, P305 + P351 + P338, P311</td>
<td>R11-36, Xi, F</td>
</tr>
<tr>
<td>Nigrosine Dye</td>
<td>616-851-1</td>
<td>8005-02-5</td>
<td></td>
<td>4</td>
<td></td>
<td>R48/20/21/22-20/21/22-48, S24/25 Xn, Xi</td>
</tr>
</tbody>
</table>

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

**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. 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:
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling:
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

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>
<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- 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>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Opaque liquid</td>
</tr>
<tr>
<td>Form</td>
<td>Black</td>
</tr>
<tr>
<td>Safety Data</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight alcoholic odor</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>64°C</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.079 (Water = 1)</td>
</tr>
<tr>
<td>% Volatile/Non-Volatile (Solids)</td>
<td>81% Volatile / 19% Non-Volatile</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

| Stability                        | Stable under recommended storage conditions |
| Conditions to Avoid              | Heat and flame                              |
| Hazardous Decomposition Products | Carbon and nitrogen oxides                  |
| Materials to Avoid               | Strong oxidizing agents                     |

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Benzy1 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

**Skin corrosion/irritation**

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

**Diacetone alcohol**
No data available

**Serious eye damage / eye irritation**

**Benzyl alcohol**
No data available

**Diacetone alcohol**
Eyes-rabbit-Severe eye irritation-24 h

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
No data available

**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

<table>
<thead>
<tr>
<th>Exposure Route</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingestion</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>May be harmful if inhaled.</td>
</tr>
<tr>
<td>Skin</td>
<td>Harmful if absorbed through skin. Causes skin irritation.</td>
</tr>
<tr>
<td>Eyes</td>
<td>Causes eye irritation.</td>
</tr>
</tbody>
</table>

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

Persistence and degradability

Benzyl alcohol
Biodegradability
Biotic/Aerobic
Result: 92-96% - Readily biodegradable

Diacetone alcohol
No data available

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: N/A
Marine pollutant: No
Poison inhalation hazard: No
Not dangerous goods

IATA
UN Number: N/A
Not dangerous goods
IMDG
Not dangerous goods.

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.

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>
<th>Revision Date</th>
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<tr>
<td>Benzyl Alcohol</td>
<td>100-51-6</td>
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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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<tr>
<td>Benzyl Alcohol</td>
<td>100-51-6</td>
</tr>
<tr>
<td>Diacetone Alcohol</td>
<td>123-42-2</td>
</tr>
</tbody>
</table>

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: 3.6
Revision Date: 02/03/17
Print Date: 02/03/17
Replaces: Version 3.5 Dated 11/04/16