1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	8103 WHITE INK
Product Number:	201-8115
REACH Registration Number:	N/A
Identified Use:	Marking ink for semiconductors
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) +1-352-323-3500 (International)

2. HAZARDS IDENTIFICATION

Emergency Overview

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 4) H302
Acute toxicity, Inhalation (Category 4) H332
Eye irritation (Category 2A) H319
Acute aquatic toxicity (Category 2) H401
Germ cell mutagenicity (Category 1B) H360

GHS Label elements, including precautionary statements

Pictogram

Signal Word: Warning

Hazard statements

H315	Causes skin irritation
H319	Causes serious eye irritation
H302 + H332	Harmful if swallowed or inhaled
H360	May damage fertility or the unborn child.
H401	Toxic to aquatic life

Precautionary statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P261	Avoid breathing fume/gas/mist/vapors/spray
P280	Wear protective gloves/protective clothing/eye protection/face protection

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

NFPA Rating

Health hazard	2
Fire	1
Reactivity hazard	1

HMIS Classification

Health hazard	2
Flammability	1
Physical hazard	1

Potential Health Effects

Eyes:	This product can cause serious irritation to eyes on contact.
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 pigment-based ink mixture.

Hazardous Ingredients

Chemical name	EC-No	Index-No	CAS-No	Amount (%)	Classification
Benzyl Alcohol	202-859-9	603-057-00-5	100-51-6	60-90	Acute Tox. 4; Eye Irrit. 2A; Aquatic Acute 2; H302, H319, H401
Propylene Glycol Monomethyl Ether Acetate	203-603-9	607-195-00-7	108-65-6	2-5	Flam. Liq. 3; H226
Titanium Dioxide			13463-67-7	2-5	Carc. 2; H351

4. FIRST AID MEASURES

In case of eye contact:

Rinse thoroughly with water for at least 15 minutes. Consult a physician, if required.

In case of skin contact:

Wash with soap and plenty of water.

In case of inhalation:
Remove person 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.

Suitable extinguishing media:
Use water spray, dry chemical, CO_2, alcohol-resistant foam.

Hazardous combustion products:
Emits carbon oxides under fire conditions.

Special protective equipment for fire fighters:
Wear self-contained breathing apparatus if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Wear protective clothing and gloves. 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. Discharge into the environment must be avoided.

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 (50-77o F) to maintain maximum shelf life.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters

Limit value type (country of origin)	Substance name	EC-No	CAS-No	Occupational exposure limit value	Source
TWA (USA)	Benzyl alcohol	202-859-9	100-51-6	10 ppm	Workplace Environmental Exposure Levels (WEEL)
TWA (USA)	Propylene Glycol Monomethyl Ether Acetate	203-603-9	108-65-6	50 ppm	Workplace Environmental Exposure Levels (WEEL)
PEL (USA)	Propylene Glycol Monomethyl Ether Acetate	203-603-9	108-65-6	100 ppm 541 mg/m3	California exposure limits for chemical contaminants (Title 8, Article 107) Remarks: Skin
STEL (USA)	Propylene Glycol Monomethyl Ether Acetate	203-603-9	108-65-6	150 ppm 811 mg/m3	California exposure limits for chemical contaminants (Title 8, Article 107) Remarks: Skin
TWA (USA)	Titanium Dioxide		13463-67-7	10 mg/m3	ACGIH Threshold Limit Values (TLV)
PEL (USA)	Titanium Dioxide		13463-67-7	10 mg/m3	California exposure limits for chemical contaminants (Title 8, Article 107)

Individual Protection Measures

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

Appearance

Form	Opaque liquid
Color	White

Safety Data

pH	No data available
Melting point/freezing point	No data available
Boiling point	No data available
Odor	Slight alcoholic odor
Odor threshold	No data available
Flash point	>60° C
Ignition temperature	No data available
Auto-ignition temperature	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Vapor pressure	No data available
Water solubility	No data available
Specific gravity	1.13 (Water = 1)
% Volatile/Non-Volatile (Solids)	72% Volatile / 28% Non-Volatile
Partition coefficient	No data available
Relative vapor density	No data available
Evaporation rate	No data available

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Benzyl Alcohol

Oral LD50

LD50 Oral-rat-male 1,620 mg/kg (ECHA)

Propylene Glycol Monomethyl Ether Acetate

Oral LD50

LD50 Oral-rat-female 8,532 mg/kg

Dermal LD50

LD50 Dermal- -rat-male and female >2,000
(OECD Test Guideline 402)

Titanium Dioxide

Oral LD50

LD50 Oral-rat > 10,000 mg/kg

Dermal LD50

LD50 Dermal-rabbit > 10,000 mg/kg

Skin corrosion/irritation

Benzyl Alcohol

Skin-rabbit
Result: No skin irritation- 4 h
(OECD Test Guideline 404)

Propylene Glycol Monomethyl Ether Acetate

Skin-rabbit
Result: No skin irritation
(OECD Test Guideline 404)

Titanium Dioxide

Skin-Human
Result: Mild skin irritation-3 h

Serious eye damage / eye irritation

Benzyl Alcohol

Eyes – Rabbit
Result: irritating
(OECD Test Guideline 405)

Propylene Glycol Monomethyl Ether Acetate

Eyes-Rabbit
Result: No eye irritation

Titanium Dioxide

Eyes-Rabbit
Result: No eye irritation

Respiratory or skin sensitization

Benzyl Alcohol

Maximization Test
Result: negative
(OECD Test Guideline 406)

Propylene Glycol Monomethyl Ether Acetate

Maximisation Test - guinea pig – Did not cause sensitization
(OECD Test Guideline 406)

Titanium Dioxide
Will not occur

Germ cell mutagenicity

Propylene Glycol Monomethyl Ether Acetate
Reverse mutation assay- S. Typhimurium
Result: Negative

Titanium Dioxide
Hamster-ovary
Micronucleus test

Hamster-lungs
DNA inhibition

Hamster-ovary
Sister chromatid exchange

Mouse
Micronucleus test

Carcinogenicity

IARC: Titanium dioxide is listed in IARC group 2B- Possibly carcinogenic to humans.

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

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

Synergistic effects
No data available

Potential health effects

Ingestion	Harmful if swallowed.
Inhalation	May be harmful if inhaled. Causes respiratory tract irritation.
Skin	Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure
Central nervous system depression.

12. ECOLOGICAL INFORMATION

Toxicity

Benzyl Alcohol

Toxicity to fish	Static test LC50- Pimephales promelas (Fathead minnow)- 460 mg /l – 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50- Daphnia magna (Water flea)- 230 mg /l – 48 h (OECD Test Guideline 202)
Toxicity to algae	Static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 700 mg/l – 72 h (OECD Test Guideline 201)

Propylene Glycol Monomethyl Ether Acetate

Toxicity to fish	Mortality LC50- Salmo gairdneri – 100-180 mg /l – 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50- Daphnia magna (Water Flea)- >500 mg /l – 48 h

Titanium Dioxide

Toxicity to fish	LC50 - other fish - > 1,000 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - > 1,000 mg/l - 48 h

Persistence and degradability

Benzyl Alcohol

Biodegradability	aerobic - Exposure time 14 d Result: 92-96% - Readily biodegradable
Biochemical Oxygen Demand (BOD)	1,550 mg/g

Theoretical Oxygen Demand	2,515 mg/g
Ratio BOD/ThBOD	62%

Propylene Glycol Monomethyl Ether Acetate

Biodegradability	Biotic/Aerobic Exposure time 28 d Result: 83% - Readily biodegradable (OECD Test Guideline 301F)
Biochemical Oxygen Demand (BOD)	0.36 mg/L
Chemical Oxygen Demand (COD)	1.74 mg/g

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
Poison inhalation hazard:	No

Not dangerous goods

IATA

UN Number:	N/A

Not dangerous goods

IMDG
Not dangerous goods.

15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, Harmful by ingestion or inhalation, , 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

	CAS No.
Benzyl Alcohol	100-51-6
Titanium Dioxide	13463-67-7

Pennsylvania Right To Know Components

	CAS No
Benzyl Alcohol	100-51-6
Propylene Glycol Monomethyl Ether Acetate	108-65-6
Titanium Dioxide	13463-67-7

New Jersey Right To Know Components

	CAS No.
Benzyl Alcohol	100-51-6
Titanium Dioxide	13463-67-7

California Prop. 65 Components

	CAS No.
Titanium Dioxide	13463-67-7

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.

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