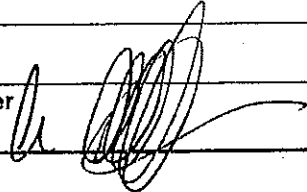


Material Safety Data Sheet

Used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200

IDENTITY (As used on label or list) Glass and Colored Glass	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
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SECTION I

Manufacturer's Name UROBOROS GLASS STUDIOS, INC.	Emergency Telephone Number (503) 284-4900
Address (Number, Street, City, State & Zipcode) 2139 N. Kerby Avenue Portland, Oregon U.S.A. 97227	Telephone Number for Location Same as Above
	Date Prepared May 1, 1998
	Signature of Preparer 

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Glass Dust	10 mg/m3	0.05 mg/m3 (crystalline silica)	N/A	

NOTE: The chemicals used to produce these products are bonded into a glass matrix and are, therefore, not available to the environment unless the product is heated above 2,000 F or ground to an extremely fine particle size.

Many of Uroboros' colored glass products are made with metal oxides. While the metals are bound up in a glass matrix, grinding to an extremely fine mesh size can liberate some of the metals in the glass. Normal grinding will generally not produce "glass flour or powder" fine enough to liberate any metals. In any event, a NIOSH (National Institute of Occupational Safety & Health) approved dust mask, at a minimum, should be worn during grinding. Uroboros recommends the use of a respirator outfitted with a HEPA filter. HEPA (High Efficiency Particulate Absolute) filters provide the greatest measure of personal protective equipment. Good exhaust ventilation is also recommended. Use a water bath or water grinding wheel to minimize dust when grinding glass. Keep your work area as clean as possible and free of glass debris.

IN ADDITION TO ABOVE, COLORED GLASS MAY CONTAIN SOME OR ALL OF THE METALS BELOW, ACCORDING TO THE SPECIFIC COLOR:

RED, ORANGE or YELLOW COLORS:

CAS# N/A

Section IIb - SARA III DATA

This product contains the following component(s) requiring reporting under Section 313 of the Emergency Planning and Community Right to Know Act, also known as Title III of the SARA (Superfund Amendments and Reauthorization Act), and 40 CFR Part 372.

COMPONENT

PERCENT PRESENT

Cadmium compounds

<0.60% as Cadmium

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Cadmium Compounds, as Cd	0.005 mg/m3	0.002 mg/m3 (respirable dust)	N/A	<.60%

Cadmium is a known cancer causing agent and nephrotoxin (kidney toxin).

Carcinogenicity Listing of Components Greater than or Equal to 0.1% by Weight.

COMPONENT	CARCINOGENICITY RATING
Cadmium (Cd)	A2 (see ratings chart below)

GREEN AND BLACK COLORS:

CAS# N/A

Section IIb - SARA III DATA

This product contains the following component(s) requiring reporting under Section 313 of the Emergency Planning and Community Right to Know Act, also known as Title III of the SARA (Superfund Amendments and Reauthorization Act), and 40 CFR Part 372.

COMPONENT

Chromium compounds

Nickel

PERCENT PRESENT

< 2% as Chromium

< 1% as Nickel

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Chromium Compounds, as CR+6	N/A	0.01 mg/m3	N/A	<2%
Nickel (Ni)	N/A	1 mg/m3	N/A	<1%

Chromium and Nickel are known cancer causing agents and nephrotoxins (kidney toxins).

Carcinogenicity Listing of Components Greater than or Equal to 0.1% by Weight.

COMPONENT	CARCINOGENICITY RATING
Chromium as Hexavalent Chrome	A1
Nickel (Ni)	A1

CARCINOGENICITY RATINGS

- NA = Substances for which no human or experimental animal carcinogenic (cancer) data have been reported.
- A5 = Not suspected as a human carcinogen.
- A4 = Not classifiable as a human carcinogen (inadequate data).
- A3 = Animal carcinogen. Causes cancer in animals (experimentally) in high doses.
- A2 = Suspected human carcinogen. Causes cancer in animals (experimentally) at dose levels, by routes of administration, at sites, of histologic type, or by mechanisms that should be of concern to exposed workers.
- A1 = Confirmed or known human carcinogen. The agent is carcinogenic to humans based on the weight of evidence from epidemiologic (cause of disease) studies of, or convincing clinical evidence in, exposed humans.

GOLD PINK AND GOLD PURPLE COLORS:

CAS# N/A

Section IIb - SARA III DATA

This product contains the following component(s) requiring reporting under Section 313 of the Emergency Planning and Community Right to Know Act, also known as Title III of the SARA (Superfund Amendments and Reauthorization Act), and 40 CFR Part 372.

COMPONENT

Lead compounds

PERCENT PRESENT

< 20% as Lead

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Lead Compounds, as Pb	N/A	5 PPM	N/A	<20%

SECTION III - Physical/Chemical Characteristics

Boiling Point Approximately 2500 F	Specific Gravity N/A
Vapor Pressure (mm Hg) N/A	Melting Point Approximately 1500 F
Vapor Density (Air = 1) N/A	Evaporation Rate (Butyl Acetate = 1) N/A
Solubility in Water Insoluble	Appearance and Odor N/A

SECTION IV - Fire and Explosion Hazard Data

Flash Point (Method Used) N/A	Flammability Limits N/A	Lower Explosion Limit N/A	Upper Explosion Limit N/A
Extinguishing Media N/A	Special Fire Fighting Procedures	Unusual Fire and Explosion Hazards	Other

SECTION V - Reactivity Data

Stability	Conditions to Avoid
Stable	Can be etched or dissolved in hydrofluoric acid (HF)
Incompatibly (materials to avoid)	Conditions of Incompatibility to Avoid
N/A	N/A
Hazardous Decomposition or Byproducts	Hazardous Decomposition or Byproducts to Avoid
N/A	N/A
Hazardous Polymerization	Conditions to Avoid
N/A	N/A

SECTION VI - Health Hazard Data

Can Material be Inhaled if ground to a powder?	Can Skin be Damaged by this Product?	Can this Product be Eaten or Ingested?	Can this Product get into your Eyes?
Yes, this product can cause respiratory damage if a high level of glass dust or powder is breathed.	Yes, skin can be cut if this product is not properly handled.	Not under normal circumstances. Ingestion can occur if glass dust is swallowed during grinding.	Yes, this product can do severe damage to the eye if proper protection is not worn.

Is this Product Carcinogenic? (Cancer Causer)	Signs and Symptoms of Overexposure?	Medical Conditions Aggravated by Exposure
No	Sneezing, runny eyes, coughing are all signs that overexposure to glass dust has occurred.	Can aggravate existing pulmonary diseases such as emphysema if exposed to high concentrations of glass dust.

Emergency and First Aid Procedures

If glass gets in eyes, wash immediately with large quantities of water. Until glass is completely removed, limit movement of eye since corneal tearing can result. Consult a physician.

Use standard first aid procedures for cuts and punctures. Wear puncture resistant gloves when handling glass.

SECTION VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Use care when handling glass shards. Glass shards can puncture or severely cut the skin.

Limit dusting as much as possible. Wear a dust mask or a respirator outfitted with a HEPA filter if dusting is a problem. Even when using water to hold down grinding dust, clean area (if water and dust are spilled) promptly. The water will evaporate leaving glass dust on the floor. At low concentrations and larger particle sizes, glass dust is considered a nuisance dust. At very small particle sizes (respirable range) breathing glass can cause pulmonary (lung) illness.

Waste Disposal Method

Minimize dusting as much as possible. Dispose of product according to Local, State and Federal guidelines.

Precautions to be Taken in Handling and Storing

Avoid getting cut. Use protective gloves when handling glass.

SECTION VIII - Control Measures

Is Respiratory Protection Necessary?	Is Ventilation Necessary?	Are there any Other Forms of Personal Protective Equipment Necessary?
Yes, if glass is ground and dusting becomes a problem. Wear a NIOSH approved HEPA respirator.	Only when dusting becomes a problem. Local exhaust ventilation would help when dusting is a problem.	Yes, wear puncture resistant gloves when handling or cutting. Wear eye protection when cutting or grinding. Goggles, safety glasses with side shields, or a complete face shield will protect your eyes. When handling large pieces (sheets) wear arm protection (gauntlets).

Work/Hygenic Practices: Food, beverages and smoking materials should not be in your work area. Wash hands if grinding is undertaken before eating, drinking, smoking or applying cosmetics.

Judgements concerning the suitability of information herein or the purchaser's purposes are necessarily the purchaser's responsibility. Care was taken in the preparation of this information, BUT UROBOROS EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OR SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE OF ITS USE.

Material Safety Data Sheet

Used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200

IDENTITY (As used on label or list) Inorganic Glass: Red, Orange and Yellow colors	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
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SECTION I

Manufacturer's Name UROBOROS GLASS STUDIOS, INC.	Emergency Telephone Number (503) 284-4900
Address (Number, Street, City, State & Zip code) 2139 N. Kerby Avenue Portland, Oregon U.S.A. 97227	Telephone Number for Location Same as Above
	Date Prepared February 26 th , 2013
	Signature of Preparer

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Cadmium compounds, as Cd	.005 mg/m3	.002mg/m3	N/A	<0.6%
Sodium Silico Flouride, as F	2.5 mg/m3	2.5 mg/m3	N/A	<5%
Glass Dust, as crystalline silica	10 mg/m3	0.05 mg/m3	N/A	N/A

NOTE: The chemicals used to produce these products are bonded into a glass matrix and are, therefore, not available to the environment unless the product is heated above 2,000 F or ground to an extremely fine particle size.

Many of Uroboros' colored glass products are made with metal oxides. While the metals are bound up in a glass matrix, grinding to an extremely fine mesh size can liberate some of the metals in the glass. Normal grinding will generally not produce "glass flour or powder" fine enough to liberate any metals. In any event, a NIOSH (National Institute of Occupational Safety & Health) approved dust mask, at a minimum, should be worn during grinding. Uroboros recommends the use of a respirator outfitted with a HEPA filter. HEPA (High Efficiency Particulate Absolute) filters provide the greatest measure of personal protective equipment. Good exhaust ventilation is also recommended. Use a water bath or water grinding wheel to minimize dust when grinding glass. Keep your work area as clean as possible and free of glass debris.

CAS# N/A

Section IIb - SARA III DATA

This product contains the following component(s) requiring reporting under Section 313 of the Emergency Planning and Community Right to Know Act, also known as Title III of the SARA (Superfund Amendments and Reauthorization Act), and 40 CFR Part 372.

COMPONENT

Cadmium compounds

PERCENT PRESENT

<0.60% as Cadmium

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Cadmium Compounds, as Cd	0.005 mg/m3	0.001 mg/m3 (respirable dust or aerosols)	N/A	<0.60%

Cadmium is a known cancer causing agent and nephrotoxin (kidney toxin).

Carcinogenicity Listing of Components Greater than or Equal to 0.1% by Weight.

COMPONENT	CARCINOGENICITY RATING
Cadmium (Cd)	A2 (see ratings chart below)

This product contains the following component(s) requiring reporting under Section 313 of the Emergency Planning and Community Right to Know Act, also known as Title III of the SARA (Superfund Amendments and Reauthorization Act), and 40 CFR Part 372.

CARCINOGENICITY RATINGS

- NA = Substances for which no human or experimental animal carcinogenic (cancer) data have been reported.
- A5 = Not suspected as a human carcinogen.
- A4 = Not classifiable as a human carcinogen (inadequate data).
- A3 = Animal carcinogen. Causes cancer in animals (experimentally) in high doses.
- A2 = Suspected human carcinogen. Causes cancer in animals (experimentally) at dose levels, by routes of administration, at sites, of histologic type, or by mechanisms that should be of concern to exposed workers.
- A1 = Confirmed or known human carcinogen. The agent is carcinogenic to humans based on the weight of evidence from epidemiologic (cause of disease) studies of, or convincing clinical evidence in, exposed humans.

SECTION III - Physical/Chemical Characteristics

Boiling Point Approximately 2500 F	Specific Gravity 2.5 – 2.6 grams/cc
Vapor Pressure (mm Hg) N/A	Melting Point Approximately 1500 F
Vapor Density (Air = 1) N/A	Evaporation Rate (Butyl Acetate = 1) N/A
Solubility in Water Insoluble	Appearance and Odor Red, Orange, or Yellow opal or transparent glass in various forms including sheets, frit, and rods. Odorless.

SECTION IV - Fire and Explosion Hazard Data

Flash Point (Method Used) N/A	Flammability Limits Non-Flammable	Lower Explosion Limit N/A	Upper Explosion Limit N/A
Extinguishing Media N/A	Special Fire Fighting Procedures N/A	Unusual Fire and Explosion Hazards N/A	Other N/A

SECTION V - Reactivity Data

Stability Stable	Conditions to Avoid Can be etched or dissolved in hydrofluoric acid (HF)
Incompatibly (materials to avoid) N/A	Conditions of Incompatibility to Avoid N/A
Hazardous Decomposition or Byproducts HF gas can be emitted during decomposition above boiling point. Silica in the glass will dissolve in HF acid and produce the corrosive gas silicon tetrafluoride.	Hazardous Decomposition or Byproducts to Avoid HF gas and silicon tetrafluoride.
Hazardous Polymerization N/A	Conditions to Avoid N/A

SECTION VI - Health Hazard Data

Can Material be Inhaled if ground to a powder?	Can Skin be Damaged by this Product?	Can this Product be Eaten or Ingested?	Can this Product get into your Eyes?
Yes, this product can cause respiratory damage if a high level of glass dust or powder is breathed.	Yes, skin can be cut if this product is not properly handled.	Not under normal circumstances. Ingestion can occur if glass dust is swallowed during grinding.	Yes, this product can do severe damage to the eye if proper eye protection is not worn.

Is this Product Carcinogenic? (Cancer Causer)	Signs and Symptoms of Overexposure?	Medical Conditions Aggravated by Exposure
Yes (as Cadmium): A2 Suspected human carcinogen	As nuisance glass dust: Sneezing, runny eyes, coughing.	Can aggravate existing pulmonary diseases such as emphysema if exposed to high concentrations of glass dust.

Emergency and First Aid Procedures

If glass gets in eyes, wash immediately with large quantities of water. Until glass is completely removed, limit movement of eye since corneal tearing can result. Consult a physician.

Use standard first aid procedures for cuts and punctures. Wear puncture resistant gloves when handling glass.

SECTION VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Use care when handling glass shards. Glass shards can puncture or severely cut the skin.

Limit dusting as much as possible. Wear a dust mask or a respirator outfitted with a HEPA filter if dusting is above PELs. Even when using water to hold down grinding dust, clean area (if water and dust are spilled) promptly. The water will evaporate leaving glass dust on the floor. At low concentrations and larger particle sizes, glass dust is considered a nuisance dust. At very small particle sizes (respirable range) breathing glass can cause pulmonary (lung) illness.

Waste Disposal Method

Minimize dusting as much as possible. Dispose of product according to Local, State and Federal guidelines.

Precautions to be Taken in Handling and Storing

Avoid getting cut. Use protective gloves when handling glass.

SECTION VIII - Control Measures

Is Respiratory Protection Necessary?	Is Ventilation Necessary?	Are there any Other Forms of Personal Protective Equipment Necessary?
Yes, when exposed to dust or fumes from decomposition above PELs. Wear a NIOSH approved HEPA respirator.	Use ventilation as a method to keep exposure below PELs and to a minimum.	Yes, wear puncture resistant gloves when handling or cutting. Wear eye protection when cutting or grinding. Goggles, safety glasses with side shields, or a complete face shield will protect your eyes. When handling large pieces (sheets) wear arm protection (gauntlets).

Work/Hygienic Practices: Food, beverages and smoking materials should not be in your work area. Wash hands if grinding is undertaken before eating, drinking, smoking or applying cosmetics. Change clothes and shoes, and shower when finished working.

Judgments concerning the suitability of information herein or the purchaser's purposes are necessarily the purchaser's responsibility. Care was taken in the preparation of this information, and uses currently available technical data that Uroboros Glass believes to be reliable, BUT UROBOROS GLASS EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY, COMPLETENESS OR SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE OF ITS USE.

Material Safety Data Sheet

Used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200

IDENTITY (As used on label or list) Inorganic Glass: White Opal	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
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SECTION I

Manufacturer's Name UROBOROS GLASS STUDIOS, INC.	Emergency Telephone Number (503) 284-4900
Address (Number, Street, City, State & Zip code) 2139 N. Kercggxgxbvby Avenue Portland, Oregon U.S.A. 97227	Telephone Number for Location Same as Above
	Date Prepared February 26 th , 2013
	Signature of Preparer

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components	OSHA PEL/TWA	ACGIH TLV-TWA	Other Limits Recommended	% (Optional)
Sodium Silico Flouride	2.5 mg (as F)/m3	2.5 mg (as F)/m3	N/A	<5% as F
Glass Dust	10 mg/m3	0.05 mg/m3 (crystalline silica)	N/A	n/a

NOTE: The chemicals used to produce White Opal Glass are bonded into a glass matrix and are, therefore, not bioavailable unless the product is heated above 2,000 F, or ground to an extremely fine particle size.

Normal grinding will generally not produce "glass flour or powder" fine enough to liberate any component chemicals. In any event, a NIOSH (National Institute of Occupational Safety & Health) approved dust mask, at a minimum, should be worn during grinding. Uroboros Glass recommends the use of a respirator outfitted with a HEPA filter. HEPA (High Efficiency Particulate Absolute) filters provide the greatest measure of personal protective equipment. Good exhaust ventilation is also recommended. Use a water bath or water grinding wheel to minimize dust when grinding glass. Keep your work area as clean as possible and free of glass debris.

SECTION III - Physical/Chemical Characteristics

Boiling Point Approximately 2500 F	Specific Gravity 2.5 – 2.6 grams/cc
Vapor Pressure (mm Hg) N/A	Melting Point Approximately 1500 F
Vapor Density (Air = 1) N/A	Evaporation Rate (Butyl Acetate = 1) N/A
Solubility in Water Insoluble	Appearance and Odor White glass in various forms including sheet and frit. Odorless

SECTION IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammability Limits	Lower Explosion Limit	Upper Explosion Limit
N/A	Non-flammable	N/A	N/A
Extinguishing Media	Special Fire Fighting Procedures	Unusual Fire and Explosion Hazards	Other
N/A	N/A	N/A	N/A

SECTION V - Reactivity Data

Stability	Conditions to Avoid
Stable	Can be etched or dissolved in hydrofluoric acid (HF)
Incompatibility (materials to avoid)	Conditions of Incompatibility to Avoid
N/A	N/A
Hazardous Decomposition or Byproducts	Hazardous Decomposition or Byproducts to Avoid
HF gas can be emitted during decomposition above boiling point. Silica in the glass will dissolve in HF acid and produce the corrosive gas silicon tetrafluoride.	HF and silicon tetrafluoride.
Hazardous Polymerization	Conditions to Avoid
N/A	N/A

SECTION VI - Health Hazard Data

Can Material be Inhaled if ground to a powder?	Can Skin be Damaged by this Product?	Can this Product be Eaten or Ingested?	Can this Product get into your Eyes?
Yes, this product can cause respiratory damage if a high level of glass dust or powder is breathed.	Yes, skin can be cut if this product is not properly handled.	Not under normal circumstances. Ingestion can occur if glass dust is swallowed during grinding.	Yes, this product can do severe damage to the eye if proper eye protection is not worn.

Is this Product Carcinogenic? (Cancer Causer)	Signs and Symptoms of Overexposure?	Medical Conditions Aggravated by Exposure
May cause cancer based on animal test data. No human data found.	Sneezing, runny eyes, coughing are all signs that overexposure to glass dust has occurred.	Can aggravate existing pulmonary diseases such as emphysema if exposed to high concentrations of glass dust.

Emergency and First Aid Procedures

Use standard first aid procedures for cuts and punctures. Wear puncture resistant gloves when handling glass.

If glass gets in eyes, wash immediately with large quantities of water. Until glass is completely removed, limit movement of eye since corneal tearing can result. Consult a physician.

SECTION VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Use care when handling glass shards. Glass shards can puncture or severely cut the skin.

Limit dusting as much as possible. Wear a dust mask or a respirator outfitted with a HEPA filter if dusting is a problem. Even when using water to hold down grinding dust, clean area (if water and dust are spilled) promptly. The water will evaporate leaving glass dust on the floor. At low concentrations and larger particle sizes, glass dust is considered a nuisance dust. At very small particle sizes (respirable dust) breathing glass can cause pulmonary (lung) illness.

Waste Disposal Method

Minimize dusting as much as possible. Dispose of product according to Local, State and Federal guidelines.

Precautions to be Taken in Handling and Storing

Avoid getting cut. Use protective gloves when handling glass.

SECTION VIII - Control Measures

Is Respiratory Protection Necessary?	Is Ventilation Necessary?	Are there any Other Forms of Personal Protective Equipment Necessary?
Yes, if glass is ground and dusting becomes a problem. Wear a NIOSH approved HEPA respirator. If glass is heated above the boiling point, wear NIOSH approved acid-vapor respirator.	Yes, as needed to meet PEL requirements if dusting or if heating above decomposition/boiling point.	Yes, wear puncture resistant gloves when handling or cutting. Wear eye protection (Goggles, safety glasses with side shields, or a face shield) when cutting or grinding. When handling large pieces (sheets) wear arm protection (gauntlets).

Work/Hygienic Practices: Wash hands before eating, drinking, smoking or applying cosmetics. Food, beverages and smoking materials should not be in your work area. Change clothes and shoes, and shower when finished working.

Judgments concerning the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Care was taken in the preparation of this information, and uses currently available technical data that Uroboros Glass believes to be reliable, BUT UROBOROS GLASS EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY, COMPLETENESS, OR SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE OF ITS USE.
